

PROJECT NOS. **19-11042 (DRAINAGE)**  
16-5136 (WTR)  
18-7089 (SEWER)

**CITY OF HOLLYWOOD**

**CONTRACT DOCUMENTS AND SPECIFICATIONS**

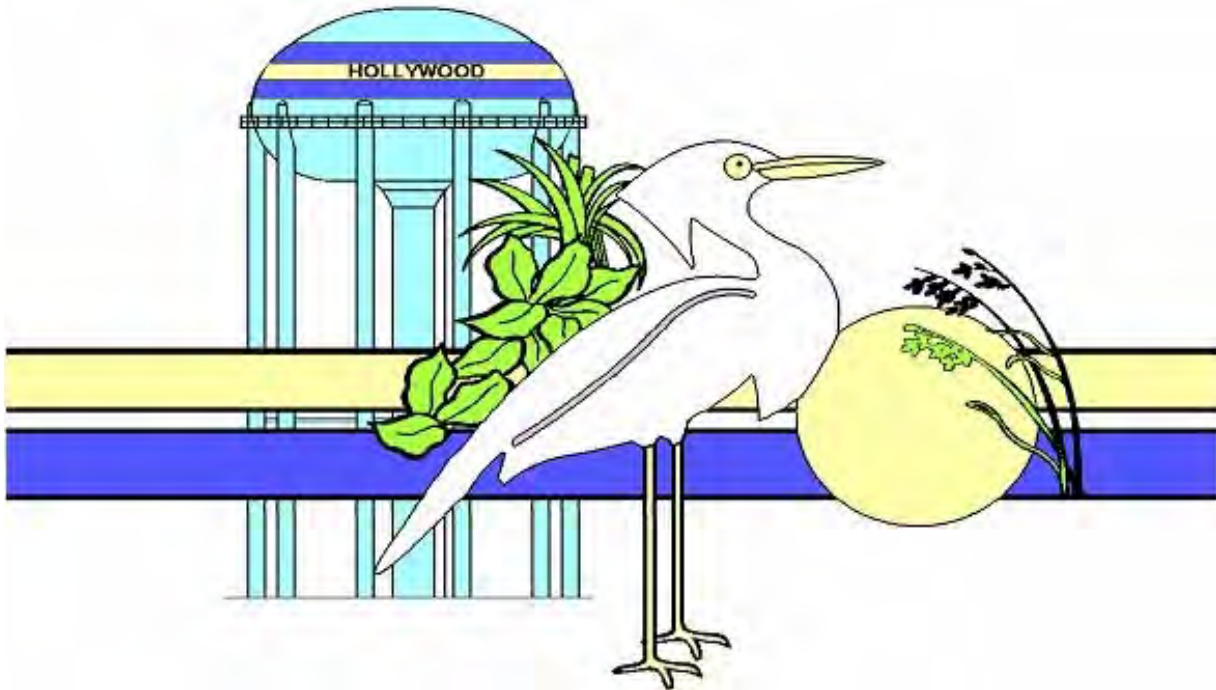
**FOR**

**Washington Park Drainage Improvements (Phase 1)**

Water Main Replacement Program  
Pembroke Road to Hollywood Boulevard  
between S. 52 and S. 56 Avenues and US 441

Washington Park / Lawn Acres  
Septic to Sewer Conversion (Phase 1A)

**November 2023**



Prepared by:

**ENGINEERING AND CONSTRUCTION SERVICES DIVISION**

1621 N 14<sup>th</sup> Avenue  
PO Box 229045  
Hollywood, FL 33022-9045



**CITY OF HOLLYWOOD  
DEPARTMENT OF PUBLIC UTILITIES  
CONTRACT DOCUMENTS AND SPECIFICATIONS  
FOR**

**WASHINGTON PARK DRAINAGE IMPROVEMENTS – PHASE 1 (19-11042)  
WATER MAIN REPLACEMENT PROGRAM – PHASE 1A (16-5136)**

**PEMBROKE ROAD TO HOLLYWOOD BOULEVARD BETWEEN S. 52 AND S. 56 AVENUES AND US 441  
WASHINGTON PARK / LAWN ACRES SEPTIC TO SEWER CONVERSION – PHASE 1A (18-7089)**

<b><u>SECTION</u></b>	<b><u>TITLE</u></b>
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<b><u>DIVISION 0 – BIDDING AND CONTRACT REQUIREMENTS</u></b>	
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CITY OF HOLLYWOOD  
DEPARTMENT OF PUBLIC UTILITIES  
ENGINEERING AND CONSTRUCTION SERVICES DIVISION (ECSD)

SECTION 00030  
NOTICE TO BIDDERS

**PROJECT NAME: WASHINGTON PARK DRAINAGE IMPROVEMENTS (Phase 1)**

WATER MAIN REPLACEMENT PROGRAM (PHASE 1A)  
PEMBROKE ROAD TO HOLLYWOOD BOULEVARD  
BETWEEN S. 52 AND S. 56 AVENUES AND US 441

WASHINGTON PARK/LAWN ACRES  
SEPTIC TO SEWER CONVERSION (PHASE 1A)

**PROJECT NUMBER: 19-11042**

16-5136

18-7089

NOTICE IS HEREBY GIVEN that the City Commission of the City of Hollywood, Florida, is advertising for sealed bids which shall be **submitted to the City Clerk's Office** (City Hall, 2600 Hollywood Blvd., Room 221) of the City of Hollywood, Florida, **until 2:00 p.m.**, local time, **March 3, 2021**. On **October 28, 2021 at 2:30 p.m.** the bids will be opened and read publicly in the Department of Public Services, Engineering and Construction Services Division Conference Room at 1621 N. 14<sup>th</sup> Avenue, Building "A", Hollywood, Florida.

**A mandatory pre-bid conference will be held on February 17, 2021 at 2:00 p.m., at the Southern Regional Wastewater Treatment Plant, located at 1621 N. 14<sup>th</sup> Avenue Hollywood, Florida 33021, First Floor Conference Room**

The Bid Package and Contract documents can be downloaded at: [www.bidsync.com](http://www.bidsync.com). For information concerning procedures for responding to this Bid, contact the Procurement Services Division **Otis J. Thomas, Senior Purchasing Agent** via email at [othomas@hollywoodfl.org](mailto:othomas@hollywoodfl.org) or by phone at (954) 921-6656, or **Steve Stewart, Assistant Director, Financial Services for Procurement (Chief Procurement Officer)** via email at [ss Stewart@hollywoodfl.org](mailto:ss Stewart@hollywoodfl.org) or by phone at 954-921-3628, or his designee. Such contact is to be for clarification purposes only. It is preferred that all other questions be submitted in writing via [bidsync.com](http://bidsync.com). Deadline for questions is **July 8, 2021 at 5 p.m.** local time.

Each bid must be accompanied by a Bid Security in an amount no less than ten percent (10%) of the bid amount. Said security shall be in the form of a Certified Check or Cashier's Check on a solvent National or State Bank, or a bid bond executed by the Bidder and a qualified Surety, satisfactory and payable to the City of Hollywood, Florida.

A Cone of Silence is in effect with respect to this bid. The Cone of Silence prohibits certain communications between potential vendors and the City. For further information, please refer to Section 30.15(E) of the City's Code of Ordinances.

The City of Hollywood is strongly committed to ensuring the participation of local Hollywood vendors in the procurement of goods and services. For additional information about the City's Local Preference Ordinance, visit [www.hollywoodfl.org](http://www.hollywoodfl.org).

**It will be the Bidder's sole responsibility to hand-deliver or mail his/her proposal to the City Clerk's Office at City Hall on or before the closing hour and date for the receipt of bids as noted above.**

The City Commission reserves the right to reject any or all bids, to waive informalities and to accept or reject all or any part of any bid, as they may deem to be in the best interest of the City of Hollywood, Florida.

Dated this **3rd Day of February, 2021**

CITY OF HOLLYWOOD, FLORIDA  
**Otis J. Thomas, Senior Purchasing Agent**  
Procurement Services Division

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## SECTION 00100

### INSTRUCTIONS TO BIDDERS

#### 1. PREPARATION OF BIDS:

Bids must be submitted on the separate and enclosed **BIDDING PACKAGE** forms, which shall be completed **by typewriter** or legibly handwritten in ink. The Bid price of each item on the form must be stated in words and numerals; in case of a conflict, words will take precedence. Where unit prices and extended totals are required, unit prices take precedence. Likewise, discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

If the Bid is made by an individual, he must sign his name therein and state his address. If the Bid is made by a firm or partnership, its name and address must be stated, as well as the name and address of each member of the firm or partnership. Bids by corporations must be signed by an authorized corporate officer (accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the Secretary or an Assistant Secretary of the corporation. The corporate address and state of incorporation shall be shown below the signature. When the state of incorporation is other than Florida, proof of registry with Florida must be attached.

#### 2. RECEIPT AND OPENING OF BIDS:

The **Bid Package** consisting of the Bid, Bid Proposal Form, Bid Bond, Trench Safety Form, all requested information as specified within and list of Subcontractors and/or material suppliers shall be completed, signed and sealed as required and must be delivered or mailed to the City Clerk of Hollywood, Florida, by the time and date specified in the Notice to Bidders and shall be properly identified on the face thereof.

Bids will be publicly opened and immediately read aloud at the time and place designated in the Notice to Bidders. No Bid will be considered which is not based upon the Drawings and Specifications, or which contains any letter or written memorandum qualifying the same, or which is not properly made out and signed in writing by the Bidder.

#### 3. PRE-BID CONFERENCE:

A **mandatory** Pre-bid Conference will be held at the City of Hollywood Southern Regional Wastewater Treatment Plant, 1621 N. 14<sup>th</sup> Avenue, Hollywood, Florida, 33020 on **June 28 at 2:00 p.m.** All Contractors planning to submit a bid are **required** to attend the meeting.

#### 4. CONTRACT DOCUMENTS:

The Contract Documents give the location and description of the work to be done under this Contract and estimated quantities of each item of work for which Bids are invited, the time in which the work must be completed, the amount of the Bid Guaranty, if any, and the date, time and place of the receipt and opening of the Bids.

## **5. EXAMINATION OF CONTRACT DOCUMENTS AND SITE:**

The Bidder is required to carefully examine the site of the work and the Contract Documents for the work contemplated. It will be assumed that the Bidder has investigated and is fully informed as to the requirements of the Contract Documents, laws, ordinances, codes and any other factors which may affect the performance of the work. Failure to be so informed will not relieve a successful Bidder of his obligation to furnish all material, equipment and labor necessary to carry out the provision of the Contract Documents and to complete the contemplated work for the consideration set forth in his Bid.

## **6. 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.

## **7. ADDENDA - CHANGES WHILE BIDDING:**

During the Bidding period, Bidders may be furnished addenda or bulletins for additions or alterations to the Plans or Specifications which shall be included in the work covered by the Proposal.

Any prospective Bidder in doubt as to the meaning of any part of the Drawings, Specifications or other Contract Documents may submit a written request to the Engineer for an interpretation. The Bidder submitting the request will be responsible for its prompt delivery. Any interpretation of the documents will be made by an addendum and a copy of such addendum will be mailed or delivered to each prospective Bidder who has received a set of documents. The City will not be responsible for any other explanations or interpretations of the proposed documents. Each prospective bidder must submit their questions or inquiries via [www.bidsync.com](http://www.bidsync.com).

## **8. 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 **10%** of the Bid is required for this project in accordance with the Notice to Bidders.

## **9. 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.

## **10. QUALIFICATIONS AND DISQUALIFICATIONS OF BIDDERS:**

Project Scope: The work performed includes site and civil work associated with the construction of the drainage improvements project for the boundaries of Washington Street (north), Rodman Street (south), S 56<sup>th</sup> Avenue (east), and US 441 (west).

Also included are the Phase 1A Water Main Replacement Program (Rodman Street to Washington Street between S. 56<sup>th</sup> Ave. and US 441) and Phase 1A Washington Park / Lawn Acres Septic to Sewer Conversion (within the same boundaries)

The Contract will be awarded only to the responsive and responsible bidder, who in the opinion of the Engineer and Procurement Division, is fully qualified to undertake the work and is in compliance with the City's Local Preference Criteria (when applicable). 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.

Bidders shall submit proof, along with their bid, that their firm has successfully completed comparable projects meeting the following criteria:

A. The Bidder shall have successfully completed a minimum of three (3) projects as prime contractor demonstrating experience with water main, sanitary gravity main and storm water main projects having a total construction value of greater than \$8 million and the following:

- a. Minimum of 10,000 linear feet of gravity sewer 8-inch or larger in diameter with at least 2,000 linear feet greater than 10 feet deep,
- b. Minimum of 16,500 linear feet of water mains 8-inch and larger in diameter,
- c. Ductile iron and polyvinyl chloride pipes,
- d. Minimum of 7,000 linear feet of storm piping 18-inch or larger,
- e. Exfiltration Trenches and Swales,

Project references shall have been performed within the past 10 years from the date of the Invitation to Bid.

B. The Bidder's proposed project manager shall have successfully completed a minimum of two (2) projects demonstrating project management experience with stormwater, wastewater, and water main projects having a total construction value (for each project) of greater than \$8 million. These projects shall have been performed within the past ten (10) years from the date of the Invitation to Bid.

B. The Bidder shall have successfully completed projects as prime contractor demonstrating experience working in a heavily industrial zone, requiring nightwork and relocation of cars.

Any one of the following causes, among others, may be considered as sufficient justification to disqualify a bidder and reject his or her bid:

- C. Submission of more than one bid for the same work by an individual, firm, partnership or corporation under the same or different names.
- D. Evidence of collusion.
- E. Previous participation in collusive bidding on work for the City of Hollywood, Florida.
- F. Submission of an unbalanced bid in which the prices bid for some items are out of

proportion to the prices bid for other items.

- G. Lack of competency. The Bidder shall provide proof that their past experience can demonstrate similar complexity and size compared to this contract. 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.
- H. Lack of responsibility as shown by past work judged by the Engineer from the standpoint of workmanship and progress.
- I. Non-compliance with the City's Local Preference (when applicable).
- J. 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.
- K. Being in arrears on any existing Contracts with the City, or any taxes, licenses or other monies due the City; in litigation with the City or having defaulted on a previous contract with the City.

#### **11. LIFE AND WITHDRAWAL OF BID:**

All Bids shall remain open for 90 days after the day of the Bid opening, however, the Engineer may, at his sole discretion, release any Bid and return the Bid Guaranty prior to that date. Any Bid may be modified or withdrawn prior to the time scheduled for the opening of Bids.

#### **12. REJECTION OF IRREGULAR BIDS:**

Bids will be considered irregular and may be rejected if they show omissions, alterations of form, additions not called for, conditions, limitations, unauthorized alternate Bids or other irregularities of any kind.

#### **13. BIDDING ERRORS:**

If after the opening of bids, a Bidder claims an error and requests to be relieved of the Award, or the Engineer believes that an error may have been made then, the Bidder shall present his work sheets and supplier quotations to the Engineer for verification. This information shall be presented on the same day as the bid opening or if the opening is in the afternoon then on the following business day. When the Engineer has suspected an error and requires the documents, Bidder's failure to produce them within the time specified shall make the Bidder non-responsive and thereby eligible for disqualification. Award may then be made to the next lowest responsive, responsible Bidder, or the work may be re-advertised or it may be performed by City forces, as the Commission desires.

#### **14. AWARD OF CONTRACT:**

The City Commission reserves the right to reject any or all Bids, or any part of any Bid, to waive any informality in any Bid, or to re-advertise for all or any part of the work contemplated. If Bids are found to be acceptable by the City Commission, written notice of award will be given to the lowest responsive, responsible Bidder.

## **15. 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.

## **16. 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 Article 15 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. In the same manner as Article 13, 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.

## **17. GUARANTY OF FAITHFUL PERFORMANCE AND PAYMENT:**

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.

## **18. INSURANCE:**

Bidder must satisfy all insurance requirements as set forth in the Supplementary and General Conditions.

**The insurance policy shall not contain any exceptions that would exclude coverage for risks that can be directly or reasonably related to the scope of goods or services in this**

**bid/proposal. A violation of this requirement at any time during the term, or any extension thereof shall be grounds for the immediate termination of any contract entered in to pursuant to this bid/proposal. In order to show that this requirement has been met, along with an insurance declaration sheet demonstrating the existence of a valid policy of insurance meeting the requirements of this bid/proposal, the successful proposer must submit a signed statement from insurance agency of record that the full policy contains no such exception.**

#### **19. QUALIFICATIONS:**

At the time of submission of the bid, Bidder must possess, and be able to provide City, any and all required Federal, State, County and/or municipal licenses, including but not limited to certificates of competency and occupational licenses. Moreover, upon receipt of the Award of the Contract, Bidder must provide proof of valid licensing for all subcontractors and/or material suppliers hired by the Contractor as set forth in Article 16 above.

When the Bidder is a Joint Venture, in order to satisfy the construction licensing requirements one member of a Joint Venture must hold a valid state certificate as well as the appropriate county and city license. The Contractor shall be held responsible for assurance that all subcontractors and/or material suppliers hired by the Contractor have the appropriate state certificate and licenses.

#### **20. PERMITS:**

The Contractor and Subcontractors must obtain and pay for the fees associated with the Permits required for all work covered under this Contract as well as any other permit required by any other regulatory agency, except as noted on the Drawings to be obtained by the Engineer.

The Contractor shall also be responsible to call for all inspections associated with the issued permits.

- END OF SECTION -



## SECTION 00200



### **NOTICE OF IMPOSITION OF CONE OF SILENCE**

On **December 9<sup>th</sup>, 2021**, the City of Hollywood, Florida Department of Procurement Services Division issued the following:

**Bid #19-11042: WASHINGTON PARK DRAINAGE IMPROVEMENTS (PHASE 1)**

**Bid #16-5136: WATER MAIN REPLACEMENT PROGRAM (PHASE 1A)**  
**PEMBROKE ROAD TO HOLLYWOOD BOULEVARD**  
**BETWEEN S. 52 AND S. 56 AVENUES AND US 441**

**Bid #18-7089: WASHINGTON PARK / LAWN ACRES**  
**SEPTIC TO SEWER CONVERSION - PHASE 1A**

Project Scope: The work performed includes site and civil work associated with the construction of the drainage improvements project for the boundaries of Washington Street (north), Rodman Street (south), S 56<sup>th</sup> Avenue (east), and US 441 (west).

Also included are the Phase 1A Water Main Replacement Program (Rodman Street to Washington Street between S. 56<sup>th</sup> Ave. and US 441) and Phase 1A Washington Park / Lawn Acres Septic to Sewer Conversion (within the same boundaries)

Pursuant to Section 30.15(F) of the Code of Ordinances, a Cone of Silence has been imposed on the items set forth above. The Cone of Silence will continue until the City awards or approves a contract, votes to reject all bids or responses, or otherwise takes action which ends the solicitation. If the City Commission refers the item back to the City Manager and staff for further review, the Cone of Silence 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.

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Public Utilities Director

cc: City Commission Office  
City Manager  
City Clerk (sunshine board)  
Affected department(s)/office(s)

- END OF SECTION -





City of Hollywood  
Public Utilities  
Vincent Morello, Director  
2600 Hollywood Boulevard, Hollywood, FL 33020

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## RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

RESPONSE DEADLINE: December 28, 2023 at 3:00 pm

Report Generated: Wednesday, February 21, 2024

### Man-Con Inc. Response

#### CONTACT INFORMATION

**Company:**

Man-Con Inc.

**Email:**

man-coninc@mancon.ws

**Contact:**

Anthony Mancini

**Address:**

3460 SW 11TH STREET  
Deerfield Beach, FL 33442

**Phone:**

(954) 427-0230

**Website:**

[mancon.ws](http://mancon.ws)

**Submission Date:**

Dec 28, 2023 11:54 AM

## ADDENDA CONFIRMATION

Addendum #1

*Confirmed Dec 22, 2023 8:43 AM by Anthony Mancini*

Addendum #2

*Confirmed Dec 22, 2023 8:43 AM by Anthony Mancini*

Addendum #3

*Confirmed Dec 22, 2023 8:43 AM by Anthony Mancini*

Addendum #4

*Confirmed Dec 22, 2023 8:43 AM by Anthony Mancini*

Addendum #5

*Confirmed Dec 24, 2023 10:31 AM by Anthony Mancini*

Addendum #6

*Confirmed Dec 28, 2023 8:15 AM by Anthony Mancini*

## QUESTIONNAIRE

### 1. VENDOR REFERENCE FORM\*

Please download the below documents, complete, and upload.

- [Vendor Reference Form.pdf](#)

Vendor\_Reference\_Form\_-\_COMBINED.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:

- A. He/she is an authorized representative of the Company, the Proposer that has submitted the attached Proposal.
- B. 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,

## RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

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- 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.

City\_of\_Hollywood\_COI.pdf

### 8. PROOF OF SUNBIZ REGISTRATION\*

Enter company FEIN to be verified in Sunbiz

59-2547432

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



RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

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**9. ACKNOWLEDGMENT AND SIGNATURE PAGE**

IF CORPORATION - DATE INCORPORATED/ORGANIZED:\*

01/31/1985

STATE INCORPORATED/ORGANIZED:\*

Florida

REMITTANCE ADDRESS\*

3460 SW 11th Street, Deerfield Beach, FL 33442

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

Anthony Mancini

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

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

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PROPOSAL FORM\*

Please download the below documents, complete, and upload.

- [Proposal Form.docx](#)

PROPOSAL\_FORM.pdfBid\_Submittal\_Package\_Complete.pdfCBE\_LOI\_Compass\_Point.pdfCBE\_LOI\_Concrete\_Pro.pdfCBE\_LOI\_Rapid\_Milling.pdfCBE\_LOI\_Amos\_Supply.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)

Anthony Mancini, Vice President

SWORN STATEMENT CONTINUATION:\*

Enter business address:

3460 SW 11th Street, Deerfield Beach, FL 33442

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.

59-2547432

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.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

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Yes

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.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

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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

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

PRICE TABLES

WATER AND SEWER ITEMS AND GENERAL PAYMENT

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>NEW SEWER PAY ITEMS AND GENERAL PAYMENT</b>					
1	Maintenance of Traffic (MOT) (Max. 10% Total Sewer Installation Construction Costs)	1	LS	\$785,000.00	\$785,000.00
2	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (0-6 FT)	1,715	LF	\$275.00	\$471,625.00
3	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (6-8 FT)	3,767	LF	\$300.00	\$1,130,100.00
4	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (8-10 FT)	2,667	LF	\$460.00	\$1,226,820.00
5	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (10-12 FT)	841	LF	\$460.00	\$386,860.00
6	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (12-14 FT)	703	LF	\$460.00	\$323,380.00
7	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (14-16 FT)	402	LF	\$750.00	\$301,500.00
8	Furnish and Install 8" SDR 26 PVC Sanitary Sewer Mains (16-18FT)	289	LF	\$600.00	\$173,400.00
9	Furnish and Install 12" SDR 26 PVC Sanitary Sewer Mains (10-12 FT)	40	LF	\$995.00	\$39,800.00
10	Furnish and Install 12" SDR 26 PVC Sanitary Sewer Mains (12-14 FT)	11	LF	\$2,500.00	\$27,500.00
11	Furnish and Install 4-FT Diameter Manholes (0-8 FT)	15	EA	\$11,000.00	\$165,000.00
12	Furnish and Install 4-FT Diameter Manholes (8-10 FT)	11	EA	\$12,000.00	\$132,000.00
13	Furnish and Install 4-FT Diameter Manholes (10-12 FT)	6	EA	\$15,000.00	\$90,000.00

RESPONSE DOCUMENT REPORT

Invitation For Bid - Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
14	Furnish and Install 5-FT Diameter Manholes (12-16 FT)	5	EA	\$40,761.00	\$203,805.00
15	Furnish and Install 5-FT Diameter Manholes (10-12 FT) - Removal and Replacement of Existing	1	EA	\$39,097.00	\$39,097.00
16	Furnish and Install 6" SDR 26 PVC Laterals with Cleanouts (50 LF)	164	EA	\$19,950.00	\$3,271,800.00
17	Owner's Contingency for Wastewater System (allowance)	1	AL	\$300,000.00	\$300,000.00
18	Consideration for Indemnification	1	LS	\$10.00	\$10.00
19	Density Testing (allowance)	1	AL	\$65,000.00	\$65,000.00
20	FPL (allowance)	1	AL	\$35,000.00	\$35,000.00
21	Wastewater System Permits, Licenses and Fees (allowance)	1	AL	\$65,000.00	\$65,000.00
22	As-BUILTs and Record Drawings (By land surveyor approved by City or EOR)	1	LS	\$250,000.00	\$250,000.00
<b>EXISTING SEWER REPLACEMENT PAY ITEMS AND GENERAL PAYMENT</b>					
23	Maintenance of Traffic (MOT) (Max. 10% Total Sewer Replacement Construction Costs)	1	LS	\$50,000.00	\$50,000.00
24	Core Drill and Rehabilitate Existing Manholes (various diameters and depths)	4	EA	\$25,000.00	\$100,000.00
25	Abandonment of Existing 4-FT Diameter Manholes (various depths)	7	EA	\$6,000.00	\$42,000.00
26	Abandonment of Existing Sanitary Sewer Mains	1,110	LF	\$50.00	\$55,500.00
27	Bypass pumping (15- inch)	30	DY	\$11,958.00	\$358,740.00

RESPONSE DOCUMENT REPORT

Invitation For Bid - Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
28	Owner's Contingency for Wastewater System (allowance)	1	AL	\$11,040.00	\$11,040.00
29	Density Testing (allowance)	1	AL	\$2,208.00	\$2,208.00
30	FPL (allowance)	1	AL	\$1,104.00	\$1,104.00
31	Wastewater System Permits, Licenses and Fee (allowance)	1	AL	\$2,208.00	\$2,208.00
32	As-BUILTs and Record Drawings (By land surveyor approved by City or EOR)	1	LS	\$250,000.00	\$250,000.00
33	Public Involvement (allowance)	1	AL	\$50,000.00	\$50,000.00
<b>WATER MAIN SYSTEM PAY ITEMS AND GENERAL PAYMENT</b>					
34	Maintenance of Traffic (MOT) (Max. 10% Total Water Construction Costs)	1	LS	\$480,000.00	\$480,000.00
35	Furnish & Install C900 - 8" PVC Water Main (Includes Pipes, Fittings and Caps)	11,628	LF	\$115.00	\$1,337,220.00
36	Furnish & Install C900 - 12" PVC C900 Water Main (Includes Pipes, Fittings and Caps)	1,412	LF	\$272.00	\$384,064.00
37	Furnish & Install C900 - 16" PVC Water Main (Includes Pipes, Fittings and Caps)	134	LF	\$1,250.00	\$167,500.00
38	Furnish & Install Class 52 - 8" DIP Water Main	1,404	LF	\$115.00	\$161,460.00
39	Furnish & Install Class 52 - 12" DIP Water Main	142	LF	\$410.00	\$58,220.00
40	Furnish & Install Class 52 - 16" DIP Water Main	14	LF	\$1,260.00	\$17,640.00
41	Furnish & Install 8" Domestic DIP Tees	2	EA	\$6,000.00	\$12,000.00
42	Furnish & Install 8" x 6" Domestic DIP Tees	21	EA	\$1,350.00	\$28,350.00

RESPONSE DOCUMENT REPORT

Invitation For Bid - Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
43	Furnish & Install 12" x 6" Domestic DIP Tees	3	EA	\$3,804.00	\$11,412.00
44	Furnish & Install 12" x 8" Domestic DIP Tees	6	EA	\$3,938.00	\$23,628.00
45	Furnish & Install 8" Domestic DIP Crosses	4	EA	\$4,027.00	\$16,108.00
46	Furnish & Install 12" x 16" Domestic DIP Crosses	1	EA	\$14,139.60	\$14,139.60
47	Furnish & Install 8" x 6" Domestic DIP Reducer	1	EA	\$1,657.28	\$1,657.28
48	Furnish & Install 8" Gate Valves	22	EA	\$15,000.00	\$330,000.00
49	Furnish & Install 12" Gate Valves	5	EA	\$15,000.00	\$75,000.00
50	Furnish & Install 16" Gate Valves	2	EA	\$25,000.00	\$50,000.00
51	Fire Line Reconnections - 6"	1	EA	\$30,000.00	\$30,000.00
52	Fire Line Reconnections - 8"	2	EA	\$30,000.00	\$60,000.00
53	Furnish & Install Fire Hydrant Assemblies (Includes Pipes, Fittings, Valves and Caps)	24	EA	\$22,727.00	\$545,448.00
54	Remove Existing Fire Hydrant Assemblies	9	EA	\$500.00	\$4,500.00
55	Water Service Removal and Replacement (Up to 1") (within Right-of-Way)	214	EA	\$2,500.00	\$535,000.00
56	Water Service Removal and Replacement (>1") (within Right-of-Way)	17	EA	\$3,000.00	\$51,000.00
57	Water Meter Reconnections (Up to 1")	214	EA	\$3,500.00	\$749,000.00
58	Water Meter Reconnections (>1")	17	EA	\$4,000.00	\$68,000.00

RESPONSE DOCUMENT REPORT

Invitation For Bid - Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.



RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
59	Place Out of Service Existing Water Mains of Various Sizes	1	LS	\$100,000.00	\$100,000.00
60	Furnish & Install Line Stops (various sizes) (allowance)	1	AL	\$35,000.00	\$35,000.00
61	Furnish & Install Backflow Preventers (various sizes) (allowance)	1	AL	\$100,000.00	\$100,000.00
62	Owner's Contingency for Water System (allowance)	1	AL	\$300,000.00	\$300,000.00
63	Density Testing (allowance)	1	AL	\$65,000.00	\$65,000.00
64	FPL (allowance)	1	AL	\$35,000.00	\$35,000.00
65	Water System Permits, Licenses and Fee (allowance)	1	AL	\$65,000.00	\$65,000.00
66	As-BUILTs and Record Drawings (By land surveyor approved by City or EOR)	1	LS	\$300,000.00	\$300,000.00
67	Public Involvement (allowance)	1	AL	\$50,000.00	\$50,000.00
<b>WASHINGTON STREET PAY ITEMS</b>					
68	Milling (1")	13,122	SY	\$12.00	\$157,464.00
69	Resurfacing (1")	13,122	SY	\$40.00	\$524,880.00
70	Temporary Pavement Markings and Signage	1	LS	\$75,000.00	\$75,000.00
71	Permanent Pavement Markings and Signage	1	LS	\$250,000.00	\$250,000.00
72	Other Restoration Items	1	LS	\$150,000.00	\$150,000.00
<b>GENERAL PAYMENT</b>					

RESPONSE DOCUMENT REPORT

Invitation For Bid - Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
73	Mobilization (Phase 1) (Max. 1%)	1	LS	\$150,000.00	\$150,000.00
74	Bonds & Insurance (Phase 1)	1	LS	\$200,000.00	\$200,000.00
75	Mobilization (Phase 2) (Max. 1%)	1	LS	\$150,000.00	\$150,000.00
76	Bonds & Insurance (Phase 2)	1	LS	\$200,000.00	\$200,000.00
77	Mobilization (Phase 3) (Max. 1%)	1	LS	\$150,000.00	\$150,000.00
78	Bonds & Insurance (Phase 3)	1	LS	\$200,000.00	\$200,000.00
79	Locating Septic Systems	164	EA	\$600.00	\$98,400.00
80	Vehicle Towing (allowance for up to 100 tows)	100	EA	\$100.00	\$10,000.00
81	Obtaining and Providing Uniformed Police Officers (allowance) Please put \$250,000.00 on this line,	1	AL	\$250,000.00	\$250,000.00
82	Demobilization (Phase 1) (Min. 1%)	1	LS	\$150,000.00	\$150,000.00
83	Demobilization (Phase 2) (Min. 1%)	1	LS	\$150,000.00	\$150,000.00
84	Demobilization (Phase 3) (Min. 1%)	1	LS	\$150,000.00	\$150,000.00
<b>TOTAL</b>					<b>\$19,682,587.88</b>

PAVING, GRADING, AND DRAINAGE ITEMS AND GENERAL PAYMENT

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
1	Mobilization including Bonds (shall not exceed 3% of Bid Item Nos. 3-22)	1	LS	\$170,000.00	\$170,000.00
2	Maintenance of Traffic (MOT)	1	LS	\$250,000.00	\$250,000.00
3	Removal and Disposal of Existing Catch Basin Structure	30	EA	\$3,591.00	\$107,730.00
4	Removal and Disposal of Existing Solid Pipe	200	LF	\$35.81	\$7,162.00
5	Grouting and Abandonment of Existing Solid Pipe	200	LF	\$93.20	\$18,640.00
6	Removal and Disposal of Existing French Drain	1,200	LF	\$48.90	\$58,680.00
7	Grouting and Abandonment of Existing French Drain	1,200	LF	\$57.24	\$68,688.00
8	Furnish and Install 24"x37" Catch Basin (CB) Structures with Corresponding Frames and Gates	85	EA	\$15,000.00	\$1,275,000.00
9	Furnish and Install Drainage Baffles	64	EA	\$1,021.00	\$65,344.00
10	Furnish and Install Swales	30,000	SF	\$3.46	\$103,800.00
11	Landscape Allowance	1	LS	\$20,000.00	\$20,000.00
12	Furnish and Install 18" Diam. French Drain	5,100	LF	\$500.00	\$2,550,000.00
13	Furnish and Install 18" Diam. Solid Pipe:	2,000	LF	\$400.00	\$800,000.00
14	12" Type B Stabilized Sub Base:	38,632	SY	\$1.00	\$38,632.00
15	12" Limerock Base:	38,632	SY	\$1.00	\$38,632.00
16	Milling	5,790	SY	\$10.00	\$57,900.00

RESPONSE DOCUMENT REPORT

Invitation For Bid - Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
17	Milling on 56th Avenue	3,675	SY	\$10.00	\$36,750.00
18	One 1" Lift of SP-9.5 Asphalt Overlay6:	200,000	SY	\$1.00	\$200,000.00
19	Furnish and Install Signs and Temporary Pavement Markings:	1	LS	\$75,000.00	\$75,000.00
20	Replacement of Signs and Permanent Pavement Markings:	1	LS	\$150,000.00	\$150,000.00
21	Replacement of Sidewalks	500	LF	\$200.00	\$100,000.00
22	ADA Ramps:	24	EA	\$3,000.00	\$72,000.00
23	Undefined Conditions Allowance	1	AL	\$300,000.00	\$300,000.00
24	Permit, Licenses, Fees Allowance	1	AL	\$50,000.00	\$50,000.00
25	Consideration for indemnification	1	LS	\$10.00	\$10.00
26	Demobilization (shall not be less than 2% of Bid Item Nos. 3-22):	1	LS	\$110,000.00	\$110,000.00
<b>TOTAL</b>					<b>\$6,723,968.00</b>

**BID ALTERNATE BID ITEMS (FURNISH AND INSTALL)**

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
27	30"x36" Catch Basin (CB) Structures with Corresponding Frames and Gates for Type 5 Curb Inlet	10	EA	\$15,000.00	\$150,000.00
28	30"x36" Storm Drainage Manhole (up to 10-ft deep):	10	EA	\$15,000.00	\$150,000.00

RESPONSE DOCUMENT REPORT

IFB No. IFB-114-23-JJ

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer.

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Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
29	12" Type B Stabilized Sub Base (Reworking): 100	100	SY	\$89.00	\$8,900.00
30	12" Limerock Base (Reworking and Regrading):	100	SY	\$89.00	\$8,900.00
31	Pipe (Less than 24" Diam) Connection to an Existing Catch Basin	10	EA	\$20,000.00	\$200,000.00
32	Public Involvement (Allowance)	1	AL	\$100,000.00	\$100,000.00
<b>TOTAL</b>					<b>\$617,800.00</b>

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ  
Solicitation #:  
Reference for: WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

Organization/Firm Name providing reference: Seminole Tribe of Florida  
Organization/Firm: James Rabideau Title: Project Manager  
Contact Name: James.Rabideau@jacobs.com Phone: 561-248-4098  
Email: James.Rabideau@jacobs.com Contract No: 3880039902  
Name of Referenced Project: Seminole Park Site Development  
Date Services were provided: 11/2019 - 11/2020 Project Amount: \$10,906,590.14  
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):

Project Site Development including 53,200 CY of Mass Excavation, 124,800 CY of Embankment from On-site and Imported Materials, 18,300 SY of Asphalt Paving, 22,000 SY of 8" Limerock Base, 23,900 SY of LBR 40 Stabilized Subgrade, 6,680 SY of Concrete Sidewalk, Irrigation and Vegetative Restoration. Utility Installation of 6,556 LF of 12"-48" RCP and HDPE Drainage Pipe, 64 drainage structures, 5,280 LF of 8" C-900 Water Main, 1,455 LF of 12" C-900 Water Main, 76 Single Water Services, 1,191 LF of 8" SDR26 Sanitary Sewer Main, 3,354 LF of 10" SDR26 Sanitary Sewer Main, 19 Sanitary Sewer Manholes, 76 Sewer Lateral Services.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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:	

## FORM 4

### VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ  
 Solicitation #:  
 Reference for: Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference: Lauderdale-By-The-Sea  
 Organization/Firm Ken Rubach Title: Director of Public Works  
 Contact Name: Ken Rubach  
 Email: KenR@lbts-fl.gov Phone: 954-640-4233  
 Name of Referenced Project: Construction Management at Risk Services for Palm Club Sewer Contract No: 21-01-02  
 Date Services were provided: 8/6/2021 - 7/31/2022 Project Amount: \$3,130,291.50  
 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):**  
 This project was to provide a new Gravity Sewer System throughout the Palm Club Neighborhood to facilitate the removal to the existing septic tank sewage system which was being utilized at each of the properties. These improvements included the installation of a new sanitary sewer system collector system, force main, sanitary sewer lift station, and service laterals installed to the edge of the right-of-way. This project also included a complete mill & overlay of the existing road way.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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):**  
 Man Con works well with Municipal Staff and are excellent at addressing residents concerns.

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



# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ

Solicitation #:

Reference for:

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference:

Broward County Water and Wastewater Services

Organization/Firm

Luz Sanchez

Title:

Project Manager

Contact Name:

Email:

Lusanchez@broward.org

Phone:

954-831-0971

Name of

Referenced

Project:

Utility Analysis Zone 122

Contract

PNC2117206C1

No:

Date Services were provided:

03/2019 - 03/2020

Project

\$14,466,032.93

Amount:

Referenced

Vendor's role in

Project:

Would you use the

Vendor again?

☒ Prime Vendor

☐ Subcontractor/ Subconsultant

☒ Yes

☐ No. Please specify in additional comments

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

See Project Reference Sheet.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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):

Will use this vendor again.

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

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



# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood

Solicitation #: IFB-114-23-JJ

Reference for: Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference:

Broward County WWS

Organization/Firm Contact Name: Mike Hagerty

Title: Project Manager

Email: mhagerty@broward.org

Phone: 954-831-3217

Name of Referenced Project: Hillsboro Pines Neighborhood Project

Contract No: Y1380003C1

Date Services were provided: 07/05/2016 - 02/28/2017

Project Amount: \$8,681,882.94

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):

See Project Reference Form.

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

Additional Comments (provide additional sheet if necessary):

THIS CONTRACTOR COMPLETED A VERY DIFFICULT PROJECT ON SCHEDULE AND WITHIN BUDGET. FINAL WORK PRODUCT WAS HIGH QUALITY.

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

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

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ  
Solicitation #:  
Reference for: Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference: Broward County Water and Wastewater  
Organization/Firm: George Lopez Title: Project Manager  
Contact Name: Email: galopez@broward.org Phone: (954) 831-0919  
Name of Referenced Project: Sanitary Sewer Collection System for District 2 Septic Tank Elimination Area 2-F Contract No: 104534; 9361  
Date Services were provided: 02/2022 - 11/2022 Project Amount: \$2,570,829.63  
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):  
Installation of Deep gravity sewer, force main abandonment, new lift station installation, force main installation, connection to existing system, and lift station startup.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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:	

**ACORD**<sup>TM</sup>**CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY)

12/11/2023

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 any rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> <b>ZGI LLC</b> <b>4443 Lyons Rd</b> <b>Suite D-212</b> <b>Coconut Creek, FL 33073</b>	<b>CONTACT NAME:</b> Nyssa Pace <b>PHONE (A/C, No, Ext):</b> 248-294-7575 <b>FAX (A/C, No):</b> 248-254-6668 <b>E-MAIL ADDRESS:</b> nyssa@zervosins.com																					
<b>INSURED</b> <b>MAN-CON INC</b> <b>3460 SW 11th St</b> <b>Deerfield Beach, FL 33442-8137</b>	<table border="1"> <thead> <tr> <th colspan="2">INSURER(S) AFFORDING COVERAGE</th><th>NAIC #</th></tr> </thead> <tbody> <tr> <td colspan="2">INSURER A : Continental Casualty Company</td><td>20443</td></tr> <tr> <td colspan="2">INSURER B : Continental Insurance Company</td><td>35289</td></tr> <tr> <td colspan="2">INSURER C : National Fire Insurance Co. Hartford</td><td>20478</td></tr> <tr> <td colspan="2">INSURER D : AGCS Marine Insurance Company</td><td>22837</td></tr> <tr> <td colspan="2">INSURER E :</td><td></td></tr> <tr> <td colspan="2">INSURER F :</td><td></td></tr> </tbody> </table>	INSURER(S) AFFORDING COVERAGE		NAIC #	INSURER A : Continental Casualty Company		20443	INSURER B : Continental Insurance Company		35289	INSURER C : National Fire Insurance Co. Hartford		20478	INSURER D : AGCS Marine Insurance Company		22837	INSURER E :			INSURER F :		
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INSURER D : AGCS Marine Insurance Company		22837																				
INSURER E :																						
INSURER F :																						

**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 INSR	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 <input checked="" type="checkbox"/> Contractual <input checked="" type="checkbox"/> X, C, & U GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	X	X	2077256991	07/31/2023	07/31/2024	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 - COMP/OP AGG \$2,000,000 \$
C	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS NON-OWNED AUTOS ONLY	X	X	2095076554	07/31/2023	07/31/2024	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$0	X	X	2095076568	07/31/2023	07/31/2024	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input checked="" type="checkbox"/> Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		X	2077257008	07/31/2023	07/31/2024	<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	Lease&Rent Equip			SML93021954	07/31/2023	07/31/2024	150,000
D	Install Float			SML93021954	07/31/2023	07/31/2024	350,000
A	Limited Pollution			2077256991	07/31/2023	07/31/2024	1,000,000/2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**RE: IFB#114-23-JJ - Washington Park Drainage Improvements (Phase 1)**

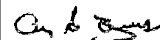
City of Hollywood is included as an additional insured with respects to the General Liability and Auto Liability policies, when required by written contract.

**CERTIFICATE HOLDER****CANCELLATION**

City of Hollywood  
 2600 Hollywood Blvd, #303  
 Hollywood, FL 33020

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



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**FORM 16**

**PROPOSAL**

TO THE MAYOR AND COMMISSIONERS  
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED Man-Con Incorporated

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 30 days with final completion within 45 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 following addenda:

No. <u>1</u>	Dated <u>10/18/23</u>
No. <u>2</u>	Dated <u>11/13/23</u>
No. <u>3</u>	Dated <u>12/11/23</u>
No. <u>4</u>	Dated <u>12/21/23</u>
No. <u>5</u>	Dated <u>12/22/23</u>
No. <u>6</u>	Dated <u>12/26/23</u>

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

5% of bid amount Dollars (\$) 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)

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



\*\*\*\*\*

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:

Man-Con Incorporated  
\_\_\_\_\_  
(Correct Name of Corporation)

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

\_\_\_\_\_  
Anthony Mancini, Vice President

(Official Title)

3460 SW 11th St., Deerfield Beach, FL 33442

(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

Man-Con Incorporated

(Name of Corporation)

RESOLVED that Anthony Mancini

(Person Authorized to Sign)

Vice President of Man-Con Incorporated

(Title) (Name of Corporation)

be authorized to sign and submit the Bid or Proposal of this corporation for the following project:  
WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

IFB-114-23-JJ

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

Man-Con Incorporated at a meeting of its Board of

(Name of Corporation)

Directors held on the 14th day of December, 2023.

By:  \_\_\_\_\_  
Luke Mancini

Title: Secretary

(SEAL)

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

- END OF SECTION -

## FORM 2

### ACKNOWLEDGMENT AND SIGNATURE PAGE

This form must be completed and submitted by the date and the time of bid opening.

Legal Company Name (include d/b/a if applicable): Man-Con Incorporated

If Corporation - Date Incorporated/Organized: 01/31/1985 Federal Tax Identification Number: 59-2547432

State Incorporated/Organized: Florida

Company Operating Address: 3460 SW 11th Street

City: Deerfield Beach State: Florida Zip Code: 33442

Remittance Address (if different from ordering address):


City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Company Contact Person: Anthony Mancini Email Address: Anthony@mancon.ws

Phone Number (include area code): 954-427-0230 Fax Number (include area code): 954-427-8133

Company's Internet Web Address: mancon.ws

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.

Bidder/Proposer's Authorized Representative's Signature:  Date: 12/14/23

Type or Print Name: Anthony Mancini

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.



## SUBMISSION

How to submit bids/proposals: Vendor's solicitation response may be submitted electronically through OpenGov, the City's designated electronic bidding system, or by mail or hand delivery to the address noted above. It is the Vendor's sole responsibility to assure its response is submitted and received by the date and time specified in the solicitation. Any timeframe references are in Eastern Standard Time. The official time for electronic submittals is OpenGov's servers, as synchronized with the atomic clock. All parties without reservation will accept the official time.

### Important Notice:

The Procurement Services Division shall distribute all official changes, modifications, responses to questions or notices relating to the requirements of this document. Any other information of any kind from any other source shall not be considered official, and bidders relying on other information do so at their own risk.

The responsibility for submitting a bid/proposal on or before the time and date is solely and strictly the responsibility of the bidder/proposer, the City will in no way be responsible for delays caused by technical difficulty or caused by any other occurrence. No part of a bid/proposal can be submitted via FAX or via direct Email to the City. No variation in price or conditions shall be permitted based upon a claim of ignorance.

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ  
Solicitation #:  
Reference for: WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

Organization/Firm Name providing reference: Seminole Tribe of Florida  
Organization/Firm: James Rabideau Title: Project Manager  
Contact Name: James.Rabideau@jacobs.com Phone: 561-248-4098  
Email: James.Rabideau@jacobs.com Contract No: 3880039902  
Name of Referenced Project: Seminole Park Site Development  
Date Services were provided: 11/2019 - 11/2020 Project Amount: \$10,906,590.14  
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):

Project Site Development including 53,200 CY of Mass Excavation, 124,800 CY of Embankment from On-site and Imported Materials, 18,300 SY of Asphalt Paving, 22,000 SY of 8" Limerock Base, 23,900 SY of LBR 40 Stabilized Subgrade, 6,680 SY of Concrete Sidewalk, Irrigation and Vegetative Restoration. Utility Installation of 6,556 LF of 12"-48" RCP and HDPE Drainage Pipe, 64 drainage structures, 5,280 LF of 8" C-900 Water Main, 1,455 LF of 12" C-900 Water Main, 76 Single Water Services, 1,191 LF of 8" SDR26 Sanitary Sewer Main, 3,354 LF of 10" SDR26 Sanitary Sewer Main, 19 Sanitary Sewer Manholes, 76 Sewer Lateral Services.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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:	

## FORM 4

### VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ

Solicitation #:

Reference for: Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference:

Lauderdale-By-The-Sea

Organization/Firm Ken Rubach

Title: Director of Public Works

Contact Name:

Email: KenR@lbts-fl.gov

Phone: 954-640-4233

Name of  
Referenced  
Project: Construction Management at Risk Services for  
Palm Club Sewer

Contract  
No: 21-01-02

Date Services were  
provided: 8/6/2021 - 7/31/2022

Project  
Amount: \$3,130,291.50

Referenced

Vendor's role in

☒ Prime Vendor

☐ Subcontractor/ Subconsultant

Project:

Would you use the

☐ Yes

☐ No. Please specify in additional comments

Vendor again?

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

This project was to provide a new Gravity Sewer System throughout the Palm Club Neighborhood to facilitate the removal to the existing septic tank sewage system which was being utilized at each of the properties. These improvements included the installation of a new sanitary sewer system collector system, force main, sanitary sewer lift station, and service laterals installed to the edge of the right-of-way. This project also included a complete mill & overlay of the existing road way.

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):

Man Con works well with Municipal Staff and are excellent at addressing residents concerns.

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

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

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ

Solicitation #:

Reference for:

Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference:

Broward County Water and Wastewater Services

Organization/Firm

Luz Sanchez

Title:

Project Manager

Contact Name:

Email:

Lusanchez@broward.org

Phone:

954-831-0971

Name of

Referenced

Utility Analysis Zone 122

Contract

PNC2117206C1

Project:

Date Services were provided:

03/2019 - 03/2020

Project

\$14,466,032.93

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):

See Project Reference Sheet.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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):

Will use this vendor again.

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

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



# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood

Solicitation #: IFB-114-23-JJ

Reference for: Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference:

Broward County WWS

Organization/Firm Contact Name: Mike Hagerty

Title: Project Manager

Email: mhagerty@broward.org

Phone: 954-831-3217

Name of Referenced Project: Hillsboro Pines Neighborhood Project

Contract No: Y1380003C1

Date Services were provided: 07/05/2016 - 02/28/2017

Project Amount: \$8,681,882.94

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):

See Project Reference Form.

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

Additional Comments (provide additional sheet if necessary):

THIS CONTRACTOR COMPLETED A VERY DIFFICULT PROJECT ON SCHEDULE AND WITHIN BUDGET. FINAL WORK PRODUCT WAS HIGH QUALITY.

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

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

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood IFB-114-23-JJ

Solicitation #:

Reference for: Washington Park Utilities Improvements (Phase 1) Drainage, Water, and Sewer

Organization/Firm Name providing reference:

Broward County Water and Wastewater

Organization/Firm George Lopez

Title: Project Manager

Contact Name:

Email: galopez@broward.org

Phone: (954) 831-0919

Name of Referenced Project: Sanitary Sewer Collection System for District 2 Septic Tank Elimination Area 2-F

Contract No: 104534; 9361

Date Services were provided: 02/2022 - 11/2022

Project Amount: \$2,570,829.63

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):

Installation of Deep gravity sewer, force main abandonment, new lift station installation, force main installation, connection to existing system, and lift station startup.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
<b>Vendor's Quality of Service</b>				
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"/>
<b>Vendor's Organization:</b>				
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"/>
<b>Timeliness/Cost Control of:</b>				
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):

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



## Utility Analysis Zone 122

Broward County, FL

### Client

Broward County WWS  
2555 W. Copans Road  
Pompano Beach, FL 33069

### Point of Contact

Luz Sanchez  
954-831-0971  
Lusanchez@broward.org

### Start | Completion Dates

March 2019 | March 2020

### Contract Method

Hard Bid Contract

### Original | Final Cost

\$13,369,728 | \$14,422,974

### Project Status

Completed

### Scope of Work:

This project included the installation of a new water main, services, and meters; abandonment/removal of existing water main; new gravity sewer system, abandonment/removal of the existing gravity sewer system, installation of new force mains, abandonment/removal of the existing force mains, installation of new lift station and abandonment/modifications of existing lift stations. The project is bounded on the north by Middle River Canal and NW 39th Street, the south by the Oakland Park Blvd, on the east by Canal 3A and UAZ 123, and on the west by the Florida Turnpike, as shown on the plans. The work area is within the City of Lauderdale Lakes and Florida Department of Transportation Rights-of-ways. Broward County Water and Wastewater Services own and operate the Water Main and Gravity Sanitary Sewer System.

Construct 29,020 LF of 4", 6", 8", 10", 12", & 16" Water Main and appurtenances including abandonment of existing mains and 2" water services. Construct 16,666 LF of 8", 10", 12" & 14" Sanitary Sewer Main and appurtenances including abandonment or removal of existing mains, laterals, new lift station, demo & removal of two existing lift stations, 1,600 LF of force main, approximately 800 ft of 8" CIPP lining of existing sanitary sewer, rehabilitation of existing sanitary sewer manholes. Horizontal Directional Drill installation of 8" & 12" Water Mains and Force Main crossing existing canals and under Oakland Park Blvd. Complete roadway re-construction and realignment throughout existing multifamily development. Tree removal and replacement and replacement of all disturbed sod and landscape.





# Seminole Park Site Development

Hollywood, FL

## Client

Seminole Tribe of Florida  
6300 Sterling Road  
Hollywood, FL 33024

## Point of Contact

James Rabideau  
561-248-4098  
James.Rabideau@jacobs.com

## Start | Completion Dates

November 2019 |  
December 2020

## Contract Method

Hard Bid Contract

## Original | Final Cost

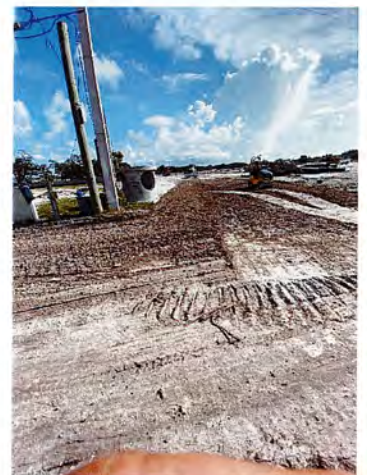
\$10,574,677 | \$10,906,590

## Project Status:

Completed

## Scope of Work:

Project Site Development including 53,200 CY of Mass Excavation, 124,800 CY of Embankment from On-site and Imported Materials, 18,300 SY of Asphalt Paving, 22,000 SY of 8" Limerock Base, 23,900 SY of LBR 40 Stabilized Subgrade, 6,680 SY of Concrete Sidewalk, Irrigation and Vegetative Restoration. Utility Installation of 6,556 LF of 12"-48" RCP and HDPE Drainage Pipe, 64 drainage structures, 5,280 LF of 8" C-900 Water Main, 1,455 LF of 12" C-900 Water Main, 76 Single Water Services, 1,191 LF of 8" SDR26 Sanitary Sewer Main, 3,354 LF of 10" SDR26 Sanitary Sewer Main, 19 Sanitary Sewer Manholes, 76 Sewer Lateral Services. This project also included an installation of a Lift Station.





## Hillsboro Pines Neighborhood

Broward County, FL

### Client

Broward County WWS  
2555 W. Copans Road  
Pompano Beach, FL 33069

### Point of Contact

Mike Hagerty  
954-831-3217  
mhagerty@broward.org

### Start | Completion Dates

July 2016 | February 2018

### Contract Method

Hard Bid Contract

### Original | Final Cost

\$8,476,264 | \$8,681,882

### Scope of Work:

This project consisted of furnishing all materials, labor, supervision, equipment, supplies, fees, expertise, and services necessary to construct the following:

- Furnished & Installed 12,735 LF of 8" Sanitary Sewer
- Furnished & Installed 3,592 LF of 4" Force Main
- Furnished & Installed 3,562 LF of 6" Water Main
- Furnished & Installed 1,108 LF of 10" Water Main
- Furnished & Installed RCP (Drainage): 15" - 48" 5,738 LF and 84 Drainage Structures
- Furnished & Installed Exfiltration Pipe: 15" 1,361 LF - 18" 305 LF and 36" 1065 LF
- 3,000LF 24" Reclaimed FM
- Liftstations
- Reconstruction of Roadway
- Sodding
- Swales
- Water Quality Control Structures
- All work performed within the Broward County Right of Way

**Project Status** Completed



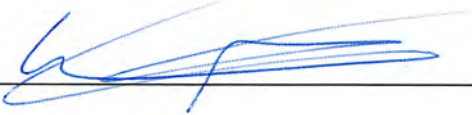
## FORM 5

### HOLD HARMLESS AND INDEMNITY CLAUSE

Man-Con Incorporated / Anthony Mancini ,

**(Company Name and Authorized Signature, Print Name)**

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.



Signature

Anthony Mancini

Printed Name

Man-Con Incorporated

Name of Company

Vice President

Title



## FORM 6

### NON-COLLUSION AFFIDAVIT

STATE OF: Florida

COUNTY OF: Broward, being first duly sworn, deposes and says that:

- (1) He/she is Vice President of Man-Con Incorporated, the Proposer that has submitted the attached Proposal.
- (2) He/she has been fully informed regarding the preparation and contents of the attached Proposal and of all pertinent circumstances regarding such Proposal;
- (3) Such Proposal is genuine and is not a collusion or sham Proposal;
- (4) 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
- (5) 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.

  
\_\_\_\_\_  
Signature

Anthony Mancini  
\_\_\_\_\_

Printed Name

Man-Con Incorporated  
\_\_\_\_\_  
Name of Company

Vice President  
\_\_\_\_\_

Title

## FORM 7

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

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC  
OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS

1. This form statement is submitted to the City of Hollywood by Anthony Mancini, Vice President for Man-Con Incorporated  
(Print individual's name and title) (Print name of entity submitting sworn statement) whose  
business address is 3460 SW 11th Street, Deerfield Beach, FL 33442  
and if applicable its Federal Employer Identification Number (FEIN) is 59-2547432. If the  
entity has no FEIN, include the Social Security Number of the individual signing this sworn  
statement.  

---
2. I understand that "public entity crime," as defined in paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid, proposal, reply, or contract for goods or services, any lease for real property, or any contract for the construction or repair of a public building or public work, involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misinterpretation.
3. 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.
4. 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.
5. 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.

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

X 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.

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

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime, but the Final Order entered by the Hearing Officer in a subsequent proceeding before a Hearing Officer of the State of the State of Florida,

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).

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.

  
(Signature)

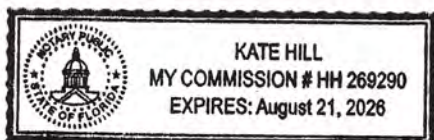
Sworn to and subscribed before me this 14th day of December, 2023.

Personally known X

Or produced identification \_\_\_\_\_ Notary Public-State of Florida

\_\_\_\_\_ my commission expires 08/21/2026  
(Type of identification)

  
(Printed, typed or stamped commissioned name of notary public)





## FORM 8

### 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.

Applicant Name and Address:

Man-Con Incorporated

3460 SW 11th Street, Deerfield Beach, FL 33442

Application Number and/or Project Name:

IFB-114-23-JJ WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE,  
WATER, AND SEWER

Applicant IRS/Vendor Number: 59-2547432



Signature

Anthony Mancini

Printed Name

Man-Con Incorporated

Name of Company

Vice President

Title

## FORM 9

### DRUG-FREE WORKPLACE PROGRAM

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.

  
\_\_\_\_\_  
Signature

Anthony Mancini  
\_\_\_\_\_  
Printed Name

Man-Con Incorporated  
\_\_\_\_\_  
Name of Company

Vice President  
\_\_\_\_\_  
Title



## FORM 10

### 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.

  
\_\_\_\_\_  
Signature

Anthony Mancini  
\_\_\_\_\_

Printed Name

Man-Con Incorporated  
\_\_\_\_\_

Name of Company

Vice President  
\_\_\_\_\_

Title



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

<b>1</b> Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. Man-Con Incorporated	
<b>2</b> Business name/disregarded entity name, if different from above	
<b>3</b> Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only <b>one</b> of the following seven boxes. <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> <input type="checkbox"/> Individual/sole proprietor or single-member LLC         </div> <div style="text-align: center;"> <input type="checkbox"/> C Corporation         </div> <div style="text-align: center;"> <input checked="" type="checkbox"/> S Corporation         </div> <div style="text-align: center;"> <input type="checkbox"/> Partnership         </div> <div style="text-align: center;"> <input type="checkbox"/> Trust/estate         </div> </div> <div style="margin-top: 10px;"> <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____         </div> <p><b>Note:</b> 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 <b>not</b> 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.</p> <div style="margin-top: 10px;"> <input type="checkbox"/> Other (see instructions) ▶ _____         </div>	
<b>4</b> Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): <div style="margin-top: 10px;">           Exempt payee code (if any) _____         </div> <div style="margin-top: 10px;">           Exemption from FATCA reporting code (if any) _____         </div> <div style="margin-top: 10px; font-size: small;"> <i>(Applies to accounts maintained outside the U.S.)</i> </div>	
<b>5</b> Address (number, street, and apt. or suite no.) See instructions. 3460 SW 11th Street	
<b>6</b> City, state, and ZIP code Deerfield Beach, FL 33442	
<b>7</b> List account number(s) here (optional)	
<b>Requester's name and address (optional)</b>	

<b>Part I</b>	<b>Taxpayer Identification Number (TIN)</b>
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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.

Social security number								
			-		-			

or

**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.

Employer Identification number								
5	9	—	2	5	4	7	4	3 2

## Part II Certification

Under penalties of perjury, I certify that:

1. 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
2. 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
3. I am a U.S. citizen or other U.S. person (defined below); and
4. 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 ▶ 12/14/23

## 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.*

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

**Note:** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

**Example.** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

## Backup Withholding

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

**Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

## What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

## Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

## Penalties

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

## Specific Instructions

### Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

**Note: ITIN applicant:** Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

### Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

### Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

### Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

#### Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 <sup>1</sup>	Generally, exempt payees 1 through 5 <sup>2</sup>
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

<sup>1</sup> See Form 1099-MISC, Miscellaneous Income, and its instructions.

<sup>2</sup> However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a) J—

A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

**Note:** You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

## Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

## Line 6

Enter your city, state, and ZIP code.

## Part I. Taxpayer Identification Number (TIN)

**Enter your TIN in the appropriate box.** If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note:** See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at [www.SSA.gov](http://www.SSA.gov). You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at [www.irs.gov/Businesses](http://www.irs.gov/Businesses) and clicking on Employer Identification Number (EIN) under Starting a Business. Go to [www.irs.gov/Forms](http://www.irs.gov/Forms) to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to [www.irs.gov/OrderForms](http://www.irs.gov/OrderForms) to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note:** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

## Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.



**1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.**

You must give your correct TIN, but you do not have to sign the certification.

**2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.** You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

**3. Real estate transactions.** You must sign the certification. You may cross out item 2 of the certification.

**4. Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

**5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

**What Name and Number To Give the Requester**

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account <sup>1</sup>
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee <sup>1</sup>
b. So-called trust account that is not a legal or valid trust under state law	The actual owner <sup>1</sup>
6. Sole proprietorship or disregarded entity owned by an individual	The owner <sup>3</sup>
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor <sup>*</sup>
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee

For this type of account:	Give name and EIN of:
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

<sup>1</sup> List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

<sup>2</sup> Circle the minor's name and furnish the minor's SSN.

<sup>3</sup> You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

<sup>4</sup> List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

**\*Note:** The grantor also must provide a Form W-9 to trustee of trust.

**Note:** If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

**Secure Your Tax Records From Identity Theft**

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.**

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to [phishing@irs.gov](mailto:phishing@irs.gov). You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at [spam@uce.gov](mailto:spam@uce.gov) or report them at [www.ftc.gov/complaint](http://www.ftc.gov/complaint). You can contact the FTC at [www.ftc.gov/idtheft](http://www.ftc.gov/idtheft) or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see [www.IdentityTheft.gov](http://www.IdentityTheft.gov) and Pub. 5027.

Visit [www.irs.gov/IdentityTheft](http://www.irs.gov/IdentityTheft) to learn more about identity theft and how to reduce your risk.

## Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

## FORM 12

### TRENCH SAFETY

This form must be completed and signed by the Respondent.

Failure to complete this form may result in the solicitation being declared non-responsive.

Respondent acknowledges that the Florida Trench Safety Act, Section 553.60 et. seq., which became effective October 1, 1990, shall be in effect during the period of construction of the project. The respondent by signing and submitting the solicitation is, in writing, assuring that it will perform any trench excavation in accordance with applicable trench safety standards. The respondent further identifies the following separate item of cost of compliance with the applicable trench safety standards as well as the method of compliance:

Method of Compliance

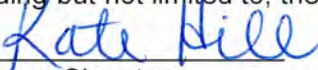
Cost

Engineered Trench Box

Total \$ 80,000.00

Respondent acknowledges that this cost is included in the applicable items of their submittal and in the Grand Total Solicitation Price. Failure to complete the above will result in the solicitation being declared non- responsive.

The Respondent is, and the Owner and Engineer are not, responsible to review or assess Respondent'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." Respondent is, and the owner and Engineer are not, responsible to determine if any safety related standards apply to the project, including but not limited to, the "Trench Safety Act."

  
\_\_\_\_\_  
Witness Signature

Kate Hill

\_\_\_\_\_  
Witness Printed Name  
3460 SW 11th St.,  
Deerfield Beach, FL 33442  
\_\_\_\_\_  
Witness Address

12/14/23

\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Contractor's Signature

Anthony Mancini

\_\_\_\_\_  
Printed Name

Vice President

\_\_\_\_\_  
Title

12/14/23

\_\_\_\_\_  
Date

- END OF SECTION -

**Form 13**  
**Bid Guaranty Form**  
(Construction)

STATE OF FLORIDA

KNOW ALL MEN BY THESE PRESENTS:

That we Man-Con, Inc, as Principal, and Westfield Insurance Company, as

Surety, are held and firmly bound unto the City of Hollywood in the sum of Five Percent  
of Bid Amount \_\_\_\_\_ Dollars (\$ 5%)

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 December 28th 2023 for

**SOLICITATION-** Washinton Park Utilities Improvements  
(Phase 1) Drainage, Water, and Sewer

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 28th

day of December, 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

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

\_\_\_\_\_  
Address

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

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Address

Approved SOLICITATION Bond

WHEN THE PRINCIPAL IS A CORPORATION:

Attest:

Secretary Luke Mancini

Man-Con, Inc  
Name of Corporation

3460 SW 11th St  
Business Address

Deerfield Beach, FL 33442

By:   
(Affix Corporate Seal)

Anthony Mancini  
Printed Name

Vice President  
Official Title

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, Luke Mancini, certify that I am the secretary of the Corporation named as Principal in the attached bond; that Anthony Mancini who signed the said bond on behalf of the Principal, was then Vice 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.

 (SEAL)  
Secretary

Approved SOLICITATION Bond

TO BE EXECUTED BY CORPORATE SURETY:

Attest:

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
Westfield Insurance Company

\_\_\_\_\_  
Corporate Surety

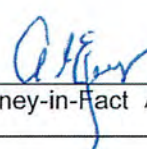
\_\_\_\_\_  
1 Park Circle

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Westfield Center, OH 44251

BY: \_\_\_\_\_  
(Affix Corporate Seal)



  
\_\_\_\_\_  
Attorney-in-Fact Angelo G Zervos

\_\_\_\_\_  
Name of Local Agency

\_\_\_\_\_  
ZGI LLC

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
4443 Lyons Rd, Ste 212 Coconut Creek, FL 33073

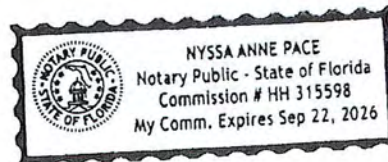
STATE OF FLORIDA

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared,  
\_\_\_\_\_  
Angelo G Zervos to me well known, who being by me first duly sworn upon  
oath says that he is the attorney-in-fact for the \_\_\_\_\_ Westfield Insurance Company \_\_\_\_\_ and  
that the has been authorized by \_\_\_\_\_ Westfield Insurance Company \_\_\_\_\_ 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 \_\_\_\_\_ December \_\_\_\_\_ day of 28, 20 23

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

My Commission Expires:

- END OF SECTION-



THIS POWER OF ATTORNEY SUPERCEDES ANY PREVIOUS POWER BEARING THIS SAME POWER # AND ISSUED PRIOR TO 12/07/22, FOR ANY PERSON OR PERSONS NAMED BELOW.

POWER NO. 0995602 00

General  
Power  
of Attorney

**Westfield Insurance Co.**  
**Westfield National Insurance Co.**  
**Ohio Farmers Insurance Co.**  
Westfield Center, Ohio

CERTIFIED COPY

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint  
**ANGELO G. ZERVOS, COURTNEY SAUNDERS, JOINTLY OR SEVERALLY**

of SOUTHFIELD and State of MI its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship in any penal limit.

**LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.**

and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"Be it Resolved, that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"Be it Further Resolved, that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their National Surety Leader and Senior Executive and their corporate seals to be hereto affixed this 07th day of DECEMBER A.D., 2022.

Corporate  
Seals  
Affixed



WESTFIELD INSURANCE COMPANY  
WESTFIELD NATIONAL INSURANCE COMPANY  
OHIO FARMERS INSURANCE COMPANY

By:   
Gary W. Stumper, National Surety Leader and  
Senior Executive

State of Ohio  
County of Medina ss.:

On this 07th day of DECEMBER A.D., 2022, before me personally came Gary W. Stumper to me known, who, being by me duly sworn, did depose and say, that he resides in Medina, OH; that he is National Surety Leader and Senior Executive of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial  
Seal  
Affixed



David A. Kotnik, Attorney at Law, Notary Public  
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio  
County of Medina ss.:

I, Frank A. Carrino, Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and 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 seals of said Companies at Westfield Center, Ohio, this 28th day of December A.D., 2023



Frank A. Carrino, Secretary

BPOAC2 (combined) (03-22)

## 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.	Asphalt Paving	Rapid Milling & Paving 1000 W. McNab Rd., Suite 103 Pompano Beach, FL 33069
2.	Surveys & As-Builts	Compass Point Surveyors, PL 3350 NW 22nd Terrace #1200 Pompano Beach, FL 33069
3.	Concrete	Concrete Pro Inc. 3350 SW 148 AVE #110 Miramar, FL 33027
4.		
5.		
6.		
7.		
8.		
9.		
10.		

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: Man-Con Incorporated  
3460 SW 11th Street, Deerfield Beach, FL 33442  
\_\_\_\_\_
2. Contractor's Telephone Number: 954-427-0230  
and e-mail address: Anthonymancon@mancon.ws  
\_\_\_\_\_
3. Contractor's License (attach copy): CGC1526881 & CUC056856  
Primary Classification: General Contractor & Underground Utility & Excavation  
Broward County License Number (attach copy): License Attached.  
\_\_\_\_\_
4. Number of years as a Contractor in construction work of the type involved in this Contract: 38 years  
\_\_\_\_\_
5. List the names and titles of all officers of Contractor's firm:  
Jeffrey Mancini, President  
Anthony Mancini, Vice President  
Luke Mancini, Secretary  
Caroline Mancini, Director  
\_\_\_\_\_
6. Name of person who inspected site or proposed work for your firm:  
Name: Jeffrey Mancini  
Date of Inspection: 10/15/23  
\_\_\_\_\_
7. What is the last project of this nature you have completed?  
Broward County Water & Wastewater Services - Sanitary Sewer Collection System  
for District 2 Septic Tank Elimination Area 2-F. See project reference sheet submitted.  
\_\_\_\_\_



8. Have you ever failed to complete work awarded to you; if so, where and why?  
No.

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

Luz Sanchez, Broward County Water & Wastewater Services 954-831-0971

Ken Rubach, Lauderdale-by-the-Sea 954-640-4233

James Rabideau, Seminole Tribe of Florida 561-248-4098

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
Hollywood Hills Sewer Extension Project	Hollywood	\$10,982,236.00	03/02/2025	70%

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(Continue list on inset sheet, if necessary)

11. What equipment do you own that is available for the work?

Equipment list submitted with bid package.

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

None.

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13. List at least three (3) similar projects completed within the last two (2) years by the bidder. For purposes of this requirement, 'similar' projects shall be considered to include experience with cured-in-place pipe lining. Include owner,

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.

5 project references attached with bid.

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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.  
Anthony Mancini

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.

LIST OF SUBCONTRACTORS (NOT USED/See Form 14)

The Bidder shall list below the name and address of each Subcontractor who will perform work under this Contract in excess of one-half percent of the total lump sum base bid price, and shall also list the portion of the work which will be done by such Subcontractor. After the opening of Proposals, changes or substitutions will be allowed with written approval of the City of Hollywood. Subcontractors must be properly licensed and hold a valid Hollywood Certificate of Competency.

	<b>Work to be Performed</b>	<b>Subcontractor's Name / Address</b>
1.	<hr/> <hr/>	<hr/> <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 16**

**PROPOSAL**

TO THE MAYOR AND COMMISSIONERS  
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED Man-Con Incorporated

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 30 days with final completion within 45 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 following addenda:

No. <u>1</u>	Dated <u>10/18/23</u>
No. <u>2</u>	Dated <u>11/13/23</u>
No. <u>3</u>	Dated <u>12/11/23</u>
No. <u>4</u>	Dated <u>12/21/23</u>
No. <u>5</u>	Dated <u>12/22/23</u>
No. <u>6</u>	Dated <u>12/26/23</u>

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

5% of bid amount Dollars (\$) 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)

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



\*\*\*\*\*

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:

Man-Con Incorporated  
\_\_\_\_\_  
(Correct Name of Corporation)

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

\_\_\_\_\_  
Anthony Mancini, Vice President

(Official Title)

3460 SW 11th St., Deerfield Beach, FL 33442

(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

Man-Con Incorporated

(Name of Corporation)

RESOLVED that Anthony Mancini

(Person Authorized to Sign)

Vice President of Man-Con Incorporated

(Title) (Name of Corporation)

be authorized to sign and submit the Bid or Proposal of this corporation for the following project:  
WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

IFB-114-23-JJ

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

Man-Con Incorporated at a meeting of its Board of

(Name of Corporation)

Directors held on the 14th day of December, 2023.

By:  \_\_\_\_\_  
Luke Mancini

Title: Secretary

(SEAL)

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

- END OF SECTION -

## JEFFREY MANCINI



**PRESIDENT**  
Jeffm@mancon.ws

Incorporated in the State of Florida in 1985, Man-Con Inc. has completed more than 400 sizeable construction projects throughout Broward, Palm Beach, and Miami-Dade counties. Founded by Guy and Jeff Mancini, Man-Con Inc. is a second-generation underground utility company. Mr. Mancini works closely with the team of highly experienced project managers and superintendents daily. Under his leadership, Man-Con Inc. has developed a reputation for its high standards of workmanship and outstanding level of performance.

#### EXPERIENCE:

##### PRESIDENT

MAN-CON INCORPORATED | 2018 TO CURRENT

##### VICE PRESIDENT/GENERAL CONSTRUCTION SUPERINTENDENT

MAN-CON INCORPORATED | 1983 - 2018

Responsible for management and oversight of all field operations including, but not limited to, water main, sewage force main, gravity sewer, storm drain, earthwork, and highway and heavy construction.

##### VICE PRESIDENT/ASSISTANT SECRETARY

RIC-MAN INTERNATIONAL | 1983 - 1985

In charge of all field operations for highway construction, heavy construction, and underground utility construction.

##### FOREMAN/SUPERINTENDENT

RIC-MAN INTERNATIONAL | 1980 - 1983

Responsible for all field operations for highway construction, heavy construction, and underground utilities.

##### FOREMAN

RIC-MAN INTERNATIONAL | 1977

In charge of various underground utility pipeline projects in southeast Michigan.

##### OPERATOR/LABORER

RIC-MAN INTERNATIONAL | 1975 - 1977

Part-time heavy equipment operator and laborer on numerous underground utility pipeline projects in southeast Michigan.

#### CLIENT REFERENCE'S

- Pat MacGregor  
Broward County WWS  
Phone: (954) 831-0904  
Email: [pmacgregor@broward.org](mailto:pmacgregor@broward.org)
- Aaron Cutler  
Mathews Consulting  
Phone: (561) 655-6175  
Email: [Acutler@baxterwoodman.com](mailto:Acutler@baxterwoodman.com)

#### Notable Projects:

##### Watermain replacement Project | Town of Highland Beach |

###### Project Manager

- Construct 7,000 LF of Water Main
- Install Aerial Crossing over Intracoastal
- 200 new Water Services

##### Avenue H East & West Roadway Improvements | City of Riviera

###### Beach | Project Manager

- Reconstruction of 8,000 LF of Roadway
- Install Drainage Structures and over 5,000 LF of RCP Drainage Pipe
- 5,500 LF of DIP Watermain
- Grout and Abandon existing Pipe
- Reline 5,055 LF of 8" VCP sewer pipe and bypass

##### Pines Village Water Main Improvements – Phase I | City of

###### Pembroke Pines | Project Manager

- Installation of Approximately 20,000 LF of 6", 8" & 12" Water Mains, Including Asphalt Trench Repairs
- 9,929 LF Abandonment of Existing Water Main
- 191 EA Water Services
- 365 EA Rear to Front Meter Relocations

##### Utility Analysis Zone 122 | Broward County Water and

###### Wastewater Services | Project Manager

- Construct 27,630 LF of 4", 6", 8", 10", 12", and 16" Water Main and Appurtenances including Abandonment of existing Mains and 2" Water Services
- Construct 16,666 LF of 8", 10", 12" and 14" Sanitary Sewer Main and Appurtenances including Abandonment or Removal of Existing Mains, New Lift Station, Demo and Removal of two existing lift stations, 1,600 LF of Force Main, CIPP lining of existing Sanitary Sewer, Rehabilitation of existing Sanitary Sewer Manholes.
- Horizontal Directional Drill Installation of 8" and 12" Water Mains and Force Mains crossing existing Canals and under Oakland Park Blvd.
- Complete Roadway Re-Construction and Realignment throughout existing Multifamily Development
- Tree Removal and Replacement of all disturbed Sod and Landscape



## ANTHONY MANCINI



**VICE PRESIDENT**  
AnthonyM@mancon.ws

Anthony has been a crucial member of the Man Con Inc team since 2005 when he worked as a foreman at the start of his career until 2011 when he took a break on work to focus on his education while attending Florida Atlantic University. At which point he returned to the Man Con team as a project manager and has proved himself as one of the go people in the organization and currently serves as the Vice President of Man Con Inc. Anthony brings with him a wealth of knowledge in multiple areas of utility and heavy civil in both the public and private sectors where he has been actively involved with construction operations for the past 15 years. Which have included multi design-build projects, Directional Drilling Operations, Lining of Existing Utilities, Open and Deep Cut utility installation, roadway and hardscape paving operations.

### **EXPERIENCE:**

#### **VICE PRESIDENT**

**MAN-CON INCORPORATED | DEC 2017 TO CURRENT**

#### **PROJECT MANAGER**

**MAN-CON INCORPORATED | DEC 2013 - DEC 2017**

Responsible for the Projects and overall performance including all aspects from project award to project close out.

#### **HALVORSEN HOLDINGS | DEC 2011 - DEC 2013**

Acquisitions, Dispositions, Construction Management of Commercial Real Estate.

#### **FOREMAN**

**MAN-CON INCORPORATED | DEC 2005 - DEC 2011**

Worked on multiple sanitary sewers, water, drainage, and road building projects in South Florida and gained experience in all aspects of construction from project start-up through final restoration.

### **EDUCATION:**

#### **BACHELOR of BUSINESS ADMINISTRATION:**

**FINANCE - FLORIDA ATLANTIC UNIVERSITY | 2013**

### **CLIENT REFERENCE'S**

- Mike Hagerty, P.E., LEED AP  
Broward County WWS  
Phone: (954) 831-3217  
Email: [mhagerty@broward.org](mailto:mhagerty@broward.org)
- Aaron Cutler, Vice President of Construction  
Baxter & Woodman  
Phone: (561)655-6175  
Email: [Acutler@baxterwoodman.com](mailto:Acutler@baxterwoodman.com)

### **Notable Projects:**

#### **Central Seacrest Corridor Utility Improvements | City of Boynton Beach | Project Manager**

- Storm Water System Upgrade including 5,210 LF of Exfiltration Trench
- 8" DI Water Main Replacement 26,933 LF
- 66,823 SY of Pavement Overlay
- 14,355 SY of Driveway Apron Restoration
- 264 Rear to Front Transfers and Connection

#### **Avenue "O" Neighborhood Infrastructure Improvements | City of Riviera Beach | Project Manager**

- 6,791 LF RCP Drainage Installation Sizes 15" – 16" DI
- 1,144 LF Remove and Replace Existing Sanitary Sewer Pipe
- 12,708 LF Furnish and Install DIP Main Pipe, Including Remove Asbestos and Grout Abandonment
- 6,761 LF Re-line Existing Sanitary Sewer
- Water Service Relocation from Rear to Front of Properties
- Complete Right of Way to Right of Way Replacement of Paved Surface, Demo and Re-Construct all Concrete Sidewalk and Driveway Aprons

#### **Pines Village Water Main Improvements – Phase I | City of Pembroke Pines | Project Manager**

- Installation of Approximately 20,000 LF of 6", 8" & 12" Water Mains, Including Asphalt Trench Repairs
- 9,929 LF Abandonment of Existing Water Main
- 191 EA Water Services
- 365 EA Rear to Front Meter Relocations

#### **Utility Analysis Zone 122 | Broward County Water and Wastewater Services | Project Manager**

- Construct 27,630 LF of 4", 6", 8", 10", 12", and 16" Water Main and Appurtenances including Abandonment of existing Mains and 2" Water Services
- Construct 16,666 LF of 8", 10", 12" and 14" Sanitary Sewer Main and Appurtenances including Abandonment or Removal of Existing Mains, New Lift Station, Demo and Removal of two existing lift stations, 1,600 LF of Force Main, CIPP lining of existing Sanitary Sewer, Rehabilitation of existing Sanitary Sewer Manholes.
- Horizontal Directional Drill Installation of 8" and 12" Water Mains and Force Mains crossing existing Canals and under Oakland Park Blvd.
- Complete Roadway Re-Construction and Realignment throughout existing Multifamily Development
- Tree Removal and Replacement of all disturbed Sod and Landscape



## MICHAEL IACOBELLI



**SENIOR PROJECT MANAGER**  
Mikei@mancon.ws

Mr. Iacobelli has been employed by Man Con, Inc. as our Senior Project Manager for the past 20 years and possesses extensive knowledge of utility and road construction in South Florida. The extent of his utility and roadway construction experience spans forty-three years and includes all construction techniques including open-cut, horizontal directional drill, micro-tunneling, TBM tunneling, poured-in-place underground concrete structures and asphalt paving in South Florida, New York, Michigan, Indiana, Florida Keys and the Bahamas.

### EXPERIENCE

#### SENIOR PROJECT MANAGER/SENIOR ESTIMATOR MAN-CON INCORPORATED | 2000 TO CURRENT

Responsible for work procurement including negotiated and municipal bid projects. Lead management team on all Florida projects. Actively manage project administration, contract negotiation and management of subcontractors, oversee scheduling and materials procurement. Led management of \$4MM of disaster recovery related work and \$176 MM in aggregate workload since 2000.

#### PROJECT MANAGER

##### FELIX EQUITIES, INC. | 1998 - 2000

Led management team for construction of \$19.9 MM Concourse "A" Apron and Utility Corridor project at Miami International Airport. Project included installation of jet fuel pipelines, water mains, sewage force mains, concrete encased electrical communication duct banks, and paving of airport grounds. Managed minority participation mandated by contract at 22% of total work value.

#### SECRETARY/TREASURER

##### COASTAL UTILITIES | 1994 - 1998

Partner in corporation. Work included installing water, sewer, drainage, and road projects, serving municipalities and private developers. Merged Michigan with Florida operations to expand operations in the south Florida market.

#### PRESIDENT

##### ICAOBELLI UNDERGROUND CONTR. CORP. | 1986 - 1994

#### VICE PRESIDENT

##### ICAOBELLI CONSTRUCTION | 1980 - 1986

#### FOREMAN/SUPERINTENDENT

##### ICAOBELLI CONSTRUCTION | 1973 - 1980

### EDUCATION:

#### BACHELOR OF SCIENCE:

##### CONSTRUCTION ENGINEERING - LAWRENCE TECHNOLOGICAL UNIVERSITY | 1981

### CLIENT REFERENCE'S

- Mike Hagerty, P.E., LEED AP  
Broward County WWS  
Phone: (954) 831-3217  
Email: [mhagerty@broward.org](mailto:mhagerty@broward.org)
- Aaron Cutler, Vice President of Construction  
Baxter & Woodman  
Phone: (561) 655-6175  
Email: [Acutler@baxterwoodman.com](mailto:Acutler@baxterwoodman.com)

### Notable Projects:

#### Central Seacrest Corridor Utility Improvements | City of Boynton Beach | Project Manager

- Storm Water System Upgrade including 5,210 LF of Exfiltration Trench
- 8" DI Water Main Replacement 26,933 LF
- 66,823 SY of Pavement Overlay
- 14,355 SY of Driveway Apron Restoration
- 264 Rear to Front Transfers and Connection

#### Avenue "O" Neighborhood Infrastructure Improvements | City of Riviera Beach | Project Manager

- 6,791 LF RCP Drainage Installation Sizes 15" - 16" DI
- 1,144 LF Remove and Replace Existing Sanitary Sewer Pipe
- 12,708 LF Furnish and Install DIP Main Pipe, Including Remove Asbestos and Grout Abandonment
- 6,761 LF Re-line Existing Sanitary Sewer
- Water Service Relocation from Rear to Front of Properties
- Complete Right of Way to Right of Way Replacement of Paved Surface, Demo and Re-Construct all Concrete Sidewalk and Driveway Aprons

#### Hillsboro Pines Neighborhood Project | Broward County | Project Manager

- Install 12,641 LF of Sanitary Sewer Pipe
- Install 4,000 LF of Reclaimed Water Line
- Install 10,500 LF of RCP Storm Drainage
- Landscape and Roadway Reconstruction

#### Utility Analysis Zone 122 | Broward County Water and Wastewater Services | Project Manager

- Construct 27,630 LF of 4", 6", 8", 10", 12", and 16" Water Main and Appurtenances including Abandonment of existing Mains and 2" Water Services
- Construct 16,666 LF of 8", 10", 12" and 14" Sanitary Sewer Main and Appurtenances including Abandonment or Removal of Existing Mains, New Lift Station, Demo and Removal of two existing lift stations, 1,600 LF of Force Main, CIPP lining of existing Sanitary Sewer, Rehabilitation of existing Sanitary Sewer Manholes.
- Horizontal Directional Drill Installation of 8" and 12" Water Mains and Force Mains crossing existing Canals and under Oakland Park Blvd.
- Complete Roadway Re-Construction and Realignment throughout existing Multifamily Development
- Tree Removal and Replacement of all disturbed Sod and Landscape



## LUKE MANCINI



GENERAL SUPERINTENDENT  
Lukem@mancon.ws

### EXPERIENCE:

GENERAL SUPERINTENDENT  
MAN-CON INCORPORATED | 2018 - PRESENT

SUPERINTENDENT  
MAN-CON INCORPORATED | 2016 - 2018  
*Superintendent*

FOREMAN  
MAN-CON INCORPORATED | 2014 - 2016  
Worked on multiple sewer, water, drainage, and road building projects in south Florida and gained experience in all aspects of construction from project start-up through final restorations.

SITE SUPERVISOR  
LOXWELL, INC. | 2011 - 2012

ASSISTANT PROPERTY MANAGER  
WELLINGTON LAND DEVELOPMENT | 2010 - 2012

EDUCATION:  
BACHELOR of BUSINESS ADMINISTRATION:  
FINANCE - FLORIDA ATLANTIC UNIVERSITY | 2015

LICENSES / CERTIFICATIONS:  
OSHA Basic Rigging Training Certification

OSHA CPR & First Aid Certification

OSHA Confined Space Entry Training Certification

OSHA Competent Person Training Certification

### CLIENT REFERENCE'S

- Pat MacGregor  
Broward County WWS  
Phone: (954) 831-0904  
Email: [pmacgregor@broward.org](mailto:pmacgregor@broward.org)
- Aaron Cutler  
Mathews Consulting  
Phone: (561)655-6175  
Email: [Acutler@baxterwoodman.com](mailto:Acutler@baxterwoodman.com)

### Notable Projects:

Hillsboro Pines Neighborhood Project | Broward County | Project Manager

- Install 12,641 LF of Sanitary Sewer Pipe
- Install 4,000 LF of Reclaimed Water Line
- Install 10,500 LF of RCP Storm Drainage
- Landscape and Roadway Reconstruction

Pines Village Water Main Improvements – Phase I | City of Pembroke Pines | Project Manager

- Installation of Approximately 20,000 LF of 6", 8" & 12" Water Mains, Including Asphalt Trench Repairs
- 9,929 LF Abandonment of Existing Water Main
- 191 EA Water Services
- 365 EA Rear to Front Meter Relocations

Watermain Replacement Project | Town of Highland Beach | Project Manager

- Construct 7,000 LF of Water Main
- Install Aerial Crossing over Intracoastal
- 200 new Water Services

Avenue "O" Neighborhood Infrastructure Improvements | City of Riviera Beach | Project Manager

- 6,791 LF RCP Drainage Installation Sizes 15" – 16" DI
- 1,144 LF Remove and Replace Existing Sanitary Sewer Pipe
- 12,708 LF Furnish and Install DIP Main Pipe, Including Remove Asbestos and Grout Abandonment
- 6,761 LF Re-line Existing Sanitary Sewer
- Water Service Relocation from Rear to Front of Properties
- Complete Right of Way to Right of Way Replacement of Paved Surface, Demo and Re-Construct all Concrete Sidewalk and Driveway Aprons

Avenue H East & West Roadway Improvements | City of Riviera Beach | Project Manager

- Reconstruction of 8,000 LF of Roadway
- Install Drainage Structures and over 5,000 LF of RCP Drainage Pipe
- 5,500 LF of DIP Watermain
- Grout and Abandon existing Pipe
- Reline 5,055 LF of 8" VCP sewer pipe and bypass



## KEVIN BESSY, PhD



**SENIOR ESTIMATOR/PROJECT MANAGER**  
Kevinb@mancon.ws

Dr. Bessy is a recent addition to the Man Con Team. Prior to joining us he was heavily involved in heavy civil construction in Ontario, Canada. Dr. Bessy is an experienced construction professional with over 25 years of experience in Heavy Civil, Commercial & Industrial experience in Supervision, Estimation, Project Management, and Senior Management. Primary employment with general/prime contractors in transportation, infrastructure, industrial, institutional, commercial, site remediation and residential site development ranging from \$1M to \$40M.

Dr. Bessy has extensive knowledge of construction techniques and a range of expertise. Posses Leadership ability and skills to run crews of employees in stressful environments to meet deadline expectations. Ability to complete projects within budget and with detailed quality.

### EXPERIENCE:

**SENIOR ESTIMATOR/PROJECT MANAGER**  
MAN-CON INCORPORATED | AUG 2022 TO CURRENT

**SELF EMPLOYED | 2021-2022**

**HEAVY CIVIL ESTIMATING DEPT. MANAGER**  
**DRAIN BROS. EXCAVATING | 2018-2020**

Oversight of the Estimating Department for Heavy Civil Projects for both municipal and private sectors of the construction industry.

**HEAVY CIVIL ESTIMATING DEPT. MANAGER**  
**TOMLINSON GROUP OF COMPANIES | 2013 - 2018**

**ESTIMATOR / PROJECT MANAGER**  
**LOUIS W. BRAY CONSTRUCTION LIMITED | 2006 - 2013**

In charge of; layout; quantitative records of excavation, backfill, and different construction materials; monthly payment applications; daily costing; time records; as-built drawings; estimating.

### EDUCATION:

**DOCTORAL IN PHILOSOPHY – Ph.D**  
**ORGANIZATIONAL DEVELOPMENT & LEDERSHIP – UNIVERSITY OF THE ROCKIES, CO | 2019**

### CLIENT REFERENCE'S

- Vipin Bansal, MBA, P.Eng. City Project Manager  
Design & Construction – Municipal  
Ottawa, ON  
Phone: 613-580-2424, ext. 21276
- Andre J. Lalonde, Councillor Ward 5  
City of Clarence-Rockland, Ontario, CAN  
Phone: 613-858-4431

## Projects List:

### 2018-2020

- James A. Gifford Causeway widening project
- Port Granby nuclear low-level radioactive waste site landfill capping
- Cleantech commons industrial development infrastructure & site work
- Reconstruction of Russel, Monck and Napier Roadways, Water Sanitary and Storm
- 882 Whitfield Drive, rehabilitation
- Talbot Dam Siteworks and Granular Supply
- Urbanization and Resurfacing - County Road 45
- Goreski's Landing Canal Dredging
- New Amherst St2 PH2
- Crowe River Bridge Replacement
- Madawaska Mines Remediations & Backfill
- Gannon's Narrows Bridge Replacement
- Northumberland County Paving
- Port Hope Brown Street Reconstruction

### 2013-2018

- CFB Rockcliffe Canada Lands-Site Infrastructure Installation and Site Development
- EUC Page Road Storm Water Management Facility & Mud Creek Upgrades
- Avalon West (Neighborhood 5) StormWater Management Facility
- Glen Cairn Stormwater Management Pond & Pump Station
- Zone 3W Feeder main Phase 2, Part 2
- CFB Rockcliffe Canada Lands - Soil & Groundwater Remediation
- Bronson Avenue Infrastructure replacement and Reconstruction – City of Ottawa
- Richardson Ridge Phase 1 - Regional Realty Site Development
- Richardson Ridge PH2A, 3A, 3B - Regional Realty Site Development
- Riverside South Storm Water Management Pond - Phase 4 – Pond No.2
- Riverside South Phase 5 – Riverside South Developments
- Carleton University Pumping Station – Carleton University
- Bridlewood PH6 – Urbandale Site Development
- Clarendon-Harmer-Ruskin Reconstruction – City of Ottawa
- Rockcliffe Park Reconstruction– City of Ottawa
- Cheney Bridge Design Build - City of Clarence-Rockland
- OHEPC Bridge Repair – PWGSC
- Southwest Transitway Extension, Pinecrest Creek Sewer Outlets – City of Ottawa
- TOHRCC Queensway Carleton Hospital Forcemain
- Forest Park Infrastructure and reconstruction – City of Ottawa

### 1990-2013

- 2010: Twp. Of Russell P.S. #1 oversight
- 2009: Estimating-Wendover WWTP Upgrades, Nicholson Locks Improvements, City of Cornwall Multiplex arena, Twp of Russell PS #1 Replacement
- 2009: City of Ottawa (Orleans, ON) Drainage Improvements.
- 2008: St. Lawrence Seaway Development Corporation, Iroquois, ON, Iroquois Locks, Lock No. 7 Electrical upgrades.
- 2008: Township of South Glengarry, ON, Oak Street Reconstruction.
- 2007-2008: City of Ottawa, ON, Pretoria Ave Lift Bridge Rehabilitation.
- 2007: Kemptville, ON, Sparks Bridge Emergency Repairs.
- 2006-2007: Township of East Hawkesbury, ON, Hughes Creek Bridge Replacement.
- 2006-2007: Township of North Glengarry, ON, Structures 25, 6 & 7 replacement.
- 2006: City of Ottawa, ON, Rockland Road Widening & Reconstruction
- 2005-2006: Ministry of Transportation Ontario, HWY 401 Reconstruction 15km from Lancaster, ON to the Quebec Border.
- 2005: City of Cornwall, ON, Amelia Street Reconstruction.
- 2005: City of Ottawa, ON, Wayling Ave, and Lenore Water & Sewer Replacement & Road Reconstruction: City of Ottawa
- 2005 ON Vanier Pkwy Water Crossing.
- 2002: Chateauguay Water Filtration Facilities, Chateauguay, NY.
- 2001: Village of Potsdam Water Treatment Plant Upgrades - Potsdam, NY.
- 2004-2005: Easton, MD, Easton Enhanced Nutrient Removal & Upgrade.



## Roberto Ponce De Leon



SR. PROJECT MANAGER/ JR. ESTIMATOR  
Robertop@mancon.ws

Experienced Project Manager with 10 + years of expertise in underground utility construction & residential construction. Proven track record of successfully managing multiple government projects from acquisition to completion. Skilled in project estimation, contract negotiations, and design-build. Exceptional problem-solving abilities to navigate unforeseen circumstances. Strong rapport with government employees, adept at effective communication within city, county, and municipal frameworks for timely and cost-effective project delivery.

#### EXPERIENCE:

SR. PROJECT MANAGER/ JR. ESTIMATOR  
MAN-CON INCORPORATED | Feb 2023 TO CURRENT

#### PROJECT MANAGER

METRO EQUIPMENT SERVICE | MAY 2015 – FEB 2023

Oversee and manage over \$60 Million worth of government projects. Coordinate the daily operations of various government contracts from acquisition to completion. Project acquisition, estimating, and bidding on governmental contracts.

#### ASSISTANT PROJECT MANAGER | AUG 2010 - March 2013

WEST INDIES HOME CONTRACTORS (WHICON)

Assisting Project Manager in the overall supervision of site activities. Generating on-site quantity take-offs, reviewing plans and making sure the building structure on-site met the drawing's specifications.

#### EDUCATION:

BSc. CONSTRUCTION PROJECT MANAGEMENT-  
HERIOT-WATT UNIVERSITY | 2013

#### LICENSES:

CGC1529078 - FLORIDA GENERAL CONTRACTORS  
CUC1225818 - FLORIDA UNDERGROUND CONTRACTOR  
FDOT ADVANCED MOT CLARIFICATION  
OSHA 10 HRs CERTIFICATION

#### CLIENT REFERENCE'S

- Luisa Arbelaez | Project Manager  
City of Sunrise | Utilities  
Phone: (954) 789-0301  
Email: [larbelaez@sunrisefl.gov](mailto:larbelaez@sunrisefl.gov)
- Shelby Hughes |  
Kimerly-Horn  
Phone: 772-360-5688  
Email: [shelby.hughes@kimeley-horn.com](mailto:shelby.hughes@kimeley-horn.com)

## Notable Projects:

Sanitary Improvement Projects (North & South Force Main Extension, Hotel District Lift Stations | City of St. Pete Beach | Project Manager

- North Force Main Extension consists of the construction of approximately 2,400 LF of 24-inch PVC force main and 20 LF of 16-inch PVC force main installed via open cut and approximately 5,400 LF of 30-inch HDPE force main installed via directional drill.
- South Force Main Extension consists of the construction of approximately 1,030 LF of 16-inch PVC force main installed via open cut and approximately 5,300 LF of 18-inch HDPE installed via directional drill.
- Hotel District Lift Stations consists of construction and installation of a submersible duplex package pump station including a new 8-ft diameter wet well, valve vault, submersible wastewater pumps, electrical and control panel, VFDs, pressure gauges, pipes, valves, access hatches, appurtenances, and all other necessary lift station components. It also consists of the removal and replacement of Gravity Mains and installation of Manholes, and rehabilitation of existing Manholes.

S-904 Furnish and Install 42" PCCP/HDPE force main along North Miami Avenue | Miami-Dade Water & Sewer Department | Project Manager

- 3,010 LF of 42" prestressed concrete cylinder pipe (PCCP) & 8,216 LF of 42" high density polyethylene HDPE via Horizontal Directional Drill, 42" Valves and Fittings along N. Miami Ave.

FKA Project # 1154-17 Grassy Key Transmission Main Replacement | Florida Keys Aqueduct Authority | Project Manager

This project consisted of replacing an approximately 2 miles long of a 30" Ductile Iron Transmission Main with a 30" Steel Transmission main from approximately mile marker 58 to mile marker 60 alongside the Overseas Highway (US-1), replacing two pressure reducing/metering vaults, and installing two (2) 6-inch HDPE directionally drilled pipelines crossing the Overseas Highway.

Emergency Directional Drill to Install Water Main crossing the Florida Turnpike at NW 207 Street to Replace the Existing Deteriorated 10-inch Crossing | Miami-Dade Water & Sewer Department | Project Manager

The project consisted of designing and constructing a 14" HDPE Horizontal Direction Drill (HDD) crossing under the Florida Turnpike and a 10" DIP via open cut to replace a deteriorated 10" Water Main. Metro designed the Horizontal Directional Drill Plan and obtained the necessary permits from all the governing agencies having jurisdiction such as DERM, FDOT, Miami-Dade Water and Sewer Dept, among others.

**ACORD™****CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY)

12/11/2023

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 any rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> <b>ZGI LLC</b> <b>4443 Lyons Rd</b> <b>Suite D-212</b> <b>Coconut Creek, FL 33073</b>		<b>CONTACT NAME:</b> Nyssa Pace <b>PHONE (A/C, No, Ext):</b> 248-294-7575 <b>FAX (A/C, No):</b> 248-254-6668 <b>E-MAIL ADDRESS:</b> nyssa@zervosins.com	
<b>INSURED</b> <b>MAN-CON INC</b> <b>3460 SW 11th St</b> <b>Deerfield Beach, FL 33442-8137</b>		<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A:</b> Continental Casualty Company	<b>NAIC #</b> <b>20443</b>
		<b>INSURER B:</b> Continental Insurance Company	<b>35289</b>
		<b>INSURER C:</b> National Fire Insurance Co. Hartford	<b>20478</b>
		<b>INSURER D:</b> AGCS Marine Insurance Company	<b>22837</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 INSR	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 <input checked="" type="checkbox"/> Contractual <input checked="" type="checkbox"/> X, C, & U GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:	X	X	2077256991	07/31/2023	07/31/2024	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 - COMP/OP AGG \$2,000,000 \$
C	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	X	X	2095076554	07/31/2023	07/31/2024	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$0	X	X	2095076568	07/31/2023	07/31/2024	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input checked="" type="checkbox"/> Y/N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		X	2077257008	07/31/2023	07/31/2024	<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	Lease&Rent Equip			SML93021954	07/31/2023	07/31/2024	150,000
D	Install Float			SML93021954	07/31/2023	07/31/2024	350,000
A	Limited Pollution			2077256991	07/31/2023	07/31/2024	1,000,000/2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: IFB#114-23-JJ - Washington Park Drainage Improvements (Phase 1)

City of Hollywood is included as an additional insured with respects to the General Liability and Auto Liability policies, when required by written contract.

**CERTIFICATE HOLDER****CANCELLATION**

City of Hollywood  
 2600 Hollywood Blvd, #303  
 Hollywood, FL 33020

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

*On 6/25/24*

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DOCUMENT# H40555

Jan 23, 2023  
Secretary of State  
6801264623CC

**Entity Name:** MAN-CON, INCORPORATED

**Current Principal Place of Business:**

3460 S.W. 11TH STREET  
DEERFIELD BEACH, FL 33442

**Current Mailing Address:**

3460 S.W. 11TH STREET  
DEERFIELD BEACH, FL 33442 US

**FEI Number:** 59-2547432

**Certificate of Status Desired:** No

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

MANCINI, CAROLINE  
3460 S.W. 11TH STREET  
DEERFIELD BEACH, FL 33442 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 DPT  
Name MANCINI, JEFFREY J.  
Address 3460 S.W 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

Title S, VP  
Name MANCINI, ANTHONY J.  
Address 3460 S.W. 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

Title VP, S  
Name MANCINI, LUKE J  
Address 3460 S.W. 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

Title D  
Name MANCINI, CAROLINE M  
Address 3460 S.W. 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

*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:** CAROLINE M MANCINI

**DIRECTOR**

**01/23/2023**

Electronic Signature of Signing Officer/Director Detail

Date



# MAN CON

## INCORPORATED

### ENGINEERING CONTRACTORS

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December 22, 2023

RE: Financial Statement

To Whom It May Concern:

We at Man Con Inc., would like to thank you for the opportunity to serve The City of Hollywood however, our financial statement is proprietary, confidential and is Trade Secret information that is exempt from Florida Statutes Chapter 119.07 ("Public Records Laws") and therefore, we do not wish it to be made public.

However, if the city wishes to view our financial records, we will arrange for your appropriate staff to view the records at our main office in Deerfield Beach, FL. at a mutually agreed upon day and time.

Man-Con's current ratio (assets / liabilities):

For fiscal year ending 7/31/19 – 6

For fiscal year ending 7/31/20 – 8

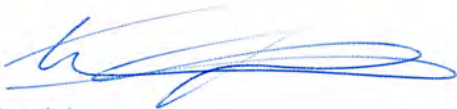
For fiscal year ending 7/31/21 – 15

For fiscal year ending 7/31/22 – 12

For fiscal year ending 7/31/23 – 12.8

If you have any questions regarding our financial information, please feel free to contact our Controller, Caroline Mancini at (954) 427-0230.

Sincerely,



Anthony Mancini  
Vice President / Project Manager  
Office: (954) 427-0230  
3460 SW 11th Street  
Deerfield Beach, FL 33442

# MAN CON

**INCORPORATED**  
**EQUIPMENT LIST**

EQUIPMENT #	TYPE	MODEL - MFR
201	GRADER	CAT 135 H
203	ROLLER	DYNAPAC CC122
204	ROLLER	DYNAPAC CC102
209	TRACTOR	INTERNATIONAL 2500
211	BROOM TRACTOR	MASSEY FERGUSON 253
214	COMBO	CAT 420D
215	COMBO	CAT 420D IT
216	LOADER	CAT 262B SKID
217	LOADER	938G SER 2
218	LOADER	938G
223	BACKHOE	KOMATSU PC 308
229	BACKHOE	KOMATSU PC138 USLC-2
231	MILLING MACHINE	ASPHALT ZIPPER AZ 500
233	GENERATOR	WACKER
234	PUMP	SLOAN 6"
235	PUMP	THOMPSON 12"
236	PUMP	THOMPSON 12"
243	PUMP	THOMPSON JET 4"
244	COMPRESSOR	HATZ DIVE
245	COMPRESSOR	SULLIVAN AIR
246	WELDER	MILLER BIG 50
248	LOADER	JD 544J
249	BROOM TRACTOR	MASSEY FERGUSON MF461-2
251	INGRAM ROLLER	3 WHEEL
252	ROLLER	DYNAPAC 134D
254	WHEEL LOADER	CAT 924K
255	COMPACT TRACK LOADER	BOBCAT T110
256	WACKER REVERSESIBLE PLATE COMPACTOR	BPU4045A
259	COMPACT TRACK LOADER	CAT 299 D2
260	KOMATSU HYDR. EXCAVATOR	PC138USLC-11
261	JOHN DEERE	644K LOADER
262	COMPACT TRACK LOADER	CAT 279D
263	TRACK EXCAVATOR	CAT 336FL
264	CAT MINI EXCAVATOR	CAT 301.7
265	Double Drum Compactor Roller	CAT CB22B
266	MILLING MACHINE	ASPHALT ZIPPER 360-185A
267	CAT MINI EXCAVATOR	CAT 306
268	JOHN DEERE	544P WHEEL LOADER
269	CAT 325	TRACK EXCAVATOR
	SKID-PACK COMPACTOR	
	WACKER REVERSESIBLE PLATE COMPACTOR	
	6X14 TRENCH BOX	
	ARIES SEEKER PUSH CAMERA	
	PIPE LASER	TRIMBLE DG711
	WACKER REVERSESIBLE PLATE COMPACTOR	BPU3545A
	WACKER REVERSESIBLE PLATE COMPACTOR	DPU5545HE
	GORMAN RUPP 6" PORABLE PUMP	GORMAN RUPP





Ron DeSantis, Governor

Melanie S. Griffin, Secretary



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

**CONSTRUCTION INDUSTRY LICENSING BOARD**

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE  
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

**MANCINI, ANTHONY JEFFREY**

MAN-CON INCORPORATED

3460 SW 11TH STREET

DEERFIELD BEACH FL 33442

**LICENSE NUMBER: CGC1526881**

**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.





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

**MANCINI, GUY ANTHONY**

MAN-CON INCORPORATED

3460 SW 11TH STREET

DEERFIELD BCH FL 33442

**LICENSE NUMBER: CUC056856**

**EXPIRATION DATE: AUGUST 31, 2024**

Always verify licenses online at [MyFloridaLicense.com](https://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 – 954-357-4829

**VALID OCTOBER 1, 2023 THROUGH SEPTEMBER 30, 2024**

**Business Name:** MAN CON INCORPORATED

**Receipt #:** 180-5159  
**Business Type:** GENERAL CONTRACTOR (BUILDING CONTRACTOR)

**Owner Name:** ANTHONY JEFFREY MANCINI/QUAL  
**Business Location:** 3460 SW 11 ST  
DEERFIELD BEACH

**Business Opened:** 03/26/2003  
**State/County/Cert/Reg:** CGC1526881  
**Exemption Code:**

**Business Phone:** 954-427-0230

Rooms

Seats

Employees

20

Machines

Professionals

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

Receipt Fee 54.00  
Packing/Processing/Canning Employees 0.00

**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:**

MAN CON INCORPORATED  
3460 SW 11 ST  
DEERFIELD BEACH, FL 33442

**Receipt #** 04B-22-00003844  
**Paid** 09/05/2023 54.00

**2023 - 2024**

# BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-357-4829

**VALID OCTOBER 1, 2023 THROUGH SEPTEMBER 30, 2024**

**Business Name:** MAN CON INCORPORATED

**Receipt #:** 189-1779

**Business Type:** ALL OTHER TYPES CONTRACTOR  
(UNDERGROUND UTILITY & EXCT  
CTR)

**Owner Name:** GUY ANTHONY MANCINI/QUAL

**Business Location:** 3460 SW 11 ST  
DEERFIELD BEACH

**Business Opened:** 08/01/1985

**State/County/Cert/Reg:** CUC056856

**Business Phone:** 954-783-9806

**Exemption Code:**

Rooms

Seats

Employees

4

Machines

Professionals

For Vending Business Only						
Number of Machines:			Vending Type:			
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
27.00	0.00	0.00	0.00	0.00	0.00	27.00

Receipt Fee

Packing/Processing/Canning Employees

27.00

0.00

**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:**

MAN CON INCORPORATED  
3460 SW 11 ST  
DEERFIELD BEACH, FL 33442

**Receipt #** 04B-22-00003844  
**Paid** 09/05/2023 27.00

**2023 - 2024**



Business Tax Office  
150 NE 2nd Ave.  
Deerfield Beach, FL 33441  
Phone: (954) 480-4333  
E-mail: web.btr@deerfield-beach.com



Business Tax Receipt License  
2023 - 2024  
License Number: 2024-467281  
Date Issued: 9/26/2023  
Expires: 9/30/2024

Classification: GENERAL CONTRACTOR'S OFFICE

MAN-CON INC  
3460 SW 11 ST  
DEERFIELD BEACH, Florida 33442

Business Location: 3460 SW 11 ST DFB 33442  
Service(s): OFFICE: 1 GNL CNTR; 1 EXCAV

Tax Amount: \$58.80	Add Fees: \$208.40	Penalty: \$0.00	Total Amount Paid: \$267.20
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**Notice:** This tax receipt becomes *NULL* and *VOID* if ownership, business name, or address changed.  
Business owner **must** apply to Business Tax Office for Transfer.

-----  
Detach and retain for your records

- This Business Tax Receipt represents proof of payment of your Business Tax Fee for the period of October 1 to September 30th. Please exercise diligence in maintaining this receipt.
- Once you have obtained a Deerfield Beach Business Tax Receipt, you will be sent a renewal notice each year beginning July 1st, (90 days prior to expiration) to the address listed on the Receipt. Please check all Receipt information and report any errors to us immediately. The City may impose fines and penalties for failure to renew this Receipt.
- Your current Receipt shall be posted so that it is able to be viewed by anyone upon entering your place of business.
- If you change your business name, ownership or location, you must apply for a new Tax Receipt.
- If you have more than one location, you must obtain a Receipt for each location.
- For information on signage regulations, visit the City's website at <http://www.deerfield-beach.com/signage>

**Increase traffic to your business by participating in the City's Recycling Rewards Program!**

Residents who recycle on a regular basis are accumulating points to be redeemed for rewards at participating businesses to claim discounts and gift certificates. Participating businesses see increased traffic from this program and those that have a commercial recycling account serviced by the City receive additional rewards.

To learn how to have your business become a Rewards Partner, please contact Recycling Perks at [ifor@recyclingperks.com](mailto:ifor@recyclingperks.com). For informatoin on how to set up a commercial recycling account, contact the City's Recycling Division at 954-480-4454.

This Receipt does not represent an endorsement or certification of the business listed herein by the City of Deefield Beach.

# *State of Florida*

## *Department of State*

I certify from the records of this office that MAN-CON, INCORPORATED is a corporation organized under the laws of the State of Florida, filed on January 31, 1985.

The document number of this corporation is H40555.

I further certify that said corporation has paid all fees due this office through December 31, 2021, that its most recent annual report/uniform business report was filed on April 1, 2021, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

*Given under my hand and the  
Great Seal of the State of Florida  
at Tallahassee, the Capital, this  
the Fourteenth day of September,  
2021*



*Randy Rye*  
**Secretary of State**

Tracking Number: 3573721933CU

To authenticate this certificate, visit the following site, enter this number, and then follow the instructions displayed.

<https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication>

DOCUMENT# H40555

**Entity Name:** MAN-CON, INCORPORATED

**Current Principal Place of Business:**

3460 S.W. 11TH STREET  
DEERFIELD BEACH, FL 33442

**Current Mailing Address:**

3460 S.W. 11TH STREET  
DEERFIELD BEACH, FL 33442 US

**FEI Number:** 59-2547432

**Certificate of Status Desired:** No

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

MANCINI, CAROLINE  
3460 S.W. 11TH STREET  
DEERFIELD BEACH, FL 33442 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 DPT  
Name MANCINI, JEFFREY J.  
Address 3460 S.W 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

Title VP, S  
Name MANCINI, LUKE J  
Address 3460 S.W. 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

Title S, VP  
Name MANCINI, ANTHONY J.  
Address 3460 S.W. 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

Title D  
Name MANCINI, CAROLINE M  
Address 3460 S.W. 11TH STREET  
City-State-Zip: DEERFIELD BEACH FL 33442

*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:** CAROLINE M MANCINI

**DIRECTOR**

**01/23/2023**

Electronic Signature of Signing Officer/Director Detail

Date





## LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: IFB-114-23-JJ

Project Title: WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

Bidder/Offeror Name: Man-Con Incorporated

Address: 3460 SW 11th Street City: Deerfield Beach State: FL Zip: 33442

Authorized Representative: Anthony Mancini Phone: 954-427-0230

CBE Firm/Supplier Name: Compass Point Surveyors, PL

Address: 3350 NW 22nd Terrace City: Pompano Beach State: FL Zip: 33069

Authorized Representative: Scott Reid, PSM Phone: 954-332-8181

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Land Surveying		\$219,300	3.32 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: [Signature] Title: Principal Date: 12/19/2023

#### Bidder/Offeror Authorized Representative

Signature: [Signature] Title: Project Manager Date: 12/28/2023

<sup>1</sup> Visit [Census.gov](https://www.census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*





# LETTER OF INTENT

## BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** \_\_\_\_\_

**Project Title:** \_\_\_\_\_

**Bidder/Offeror Name:** \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

**CBE Firm/Supplier Name:** \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
			2.54% %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

#### Bidder/Offeror Authorized Representative

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

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# LETTER OF INTENT

## BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** \_\_\_\_\_

**Project Title:** \_\_\_\_\_

**Bidder/Offeror Name:** \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

**CBE Firm/Supplier Name:** \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
			%
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

#### Bidder/Offeror Authorized Representative

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

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# LETTER OF INTENT

## BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** IFB-114-23-JJ

**Project Title:** WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

**Bidder/Offeror Name:** Man-Con Incorporated

**Address:** 3460 SW 11th Street **City:** Deerfield Beach **State:** FL **Zip:** 33442

**Authorized Representative:** Anthony Mancini **Phone:** 954-427-0230

**CBE Firm/Supplier Name:** AMOS SUPPLY INC.

**Address:** 1850 NW 15TH AVE **City:** PUMPAHO BCH. **State:** FL **Zip:** 33069

**Authorized Representative:** Carl Hunt **Phone:** 954-778-0105

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
<u>Supply Industrial Supplies</u>	<u>423720</u>		%
<u>+ Waterworks supplies</u>	<u>423730</u>	<u>\$1,550,000</u>	<u>23.05</u> %
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

**Signature:** Carl Hunt **Title:** President **Date:** 12/19/23

#### Bidder/Offeror Authorized Representative

**Signature:** [Signature] **Title:** Project Manager **Date:** 12/28/2023

<sup>1</sup> Visit [Census.gov](https://www.census.gov) and select **NAICS** to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.



# LETTER OF INTENT

## BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** IFB-114-23-JJ

**Project Title:** WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

**Bidder/Offoror Name:** Man-Con Incorporated

Address: 3460 SW 11th Street City: Deerfield Beach State: FL Zip: 33442

Authorized Representative: Anthony Mancini Phone: 954-427-0230

**CBE Firm/Supplier Name:** AMOS SUPPLY INC.

Address: 1850 NW 15TH AVE City: PUMPAHO BCH. State: FL Zip: 33069

Authorized Representative: Carl Hunt Phone: 954-778-0105

- A. This is a letter of intent between the bidder/offoror on this project and a CBE firm for the CBE to perform work on this project.
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- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offoror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
<u>Supply Industrial Supplies</u>	<u>423720</u>	<u>\$550,000</u>	<u>8.18</u> %
<u>+ Waterworks supplies</u>	<u>423730</u>	<u>\$1,000,000</u>	<u>14.87</u> %
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: Carl Hunt Title: President Date: 12/19/23

#### Bidder/Offoror Authorized Representative

Signature: [Signature] Title: Project Manager Date: 12/28/2023

<sup>1</sup> Visit [Census.gov](https://www.census.gov) and select **NAICS** to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offoror include a dollar amount in its bid/offer.

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## LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: IFB-114-23-JJ

Project Title: WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

Bidder/Offeror Name: Man-Con Incorporated

Address: 3460 SW 11th Street City: Deerfield Beach State: FL Zip: 33442

Authorized Representative: Anthony Mancini Phone: 954-427-0230

CBE Firm/Supplier Name: Compass Point Surveyors, PL

Address: 3350 NW 22nd Terrace City: Pompano Beach State: FL Zip: 33069

Authorized Representative: Scott Reid, PSM Phone: 954-332-8181

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Land Surveying	541370	\$219,300	3.32 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: [Signature] Title: Principal Date: 12/19/2023

#### Bidder/Offeror Authorized Representative

Signature: [Signature] Title: Project Manager Date: 12/28/2023

<sup>1</sup> Visit [Census.gov](https://www.census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*



# LETTER OF INTENT

## BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** IFB-114-23-JJ

**Project Title:** WASHINGTON PARK UTILITIES IMPROVEMENTS (PHASE 1) DRAINAGE, WATER, AND SEWER

**Bidder/Offeror Name:** Man-Con Incorporated

Address: 3460 SW 11th Street City: Deerfield Beach State: FL Zip: 33442

Authorized Representative: Anthony Mancini Phone: 954-427-0230

**CBE Firm/Supplier Name:** Rapid Milling & Paving LLC

Address: 1000 W MCNAB RD #103 City: Pompano Beach State: FL Zip: 33069

Authorized Representative: Dominik Montes Phone: 954-517-8417

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Asphalt Work	237310	\$ 456,000.00	6.91 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: Dominik Montes Digitally signed by Dominik Montes  
DN: C=US, E=robertop@mancon.us, O=Man-Con Inc.,  
OU=Man-Con Inc, CN=Roberto Ponce de Leon  
Date: 2023.12.19 10:06:55 -05'00' Title: MANAGING MEMBER Date: 12/19/2023

#### Bidder/Offeror Authorized Representative

Signature:  Digitally signed by Roberto Ponce de Leon  
DN: C=US, E=robertop@mancon.us, O=Man-Con Inc.,  
OU=Man-Con Inc, CN=Roberto Ponce de Leon  
Date: 2023.12.28 10:06:56 -05'00' Title: Project Manager Date: 12/28/2023

<sup>1</sup> Visit [Census.gov](https://www.census.gov) and select [NAICS](https://www.census.gov/naics) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*



# LETTER OF INTENT

## BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** \_\_\_\_\_

**Project Title:** \_\_\_\_\_

**Bidder/Offeror Name:** \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

**CBE Firm/Supplier Name:** \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
			2.54% %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

#### CBE Firm/Supplier Authorized Representative

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

#### Bidder/Offeror Authorized Representative

Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*

SECTION 00500

CONTRACT

THIS AGREEMENT, made and entered into, this \_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_, 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

**Man-Con, Incorporated**

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:

**WASHINGTON PARK DRAINAGE IMPROVEMENTS – PHASE 1 (19-11042)  
WATER MAIN REPLACEMENT PROGRAM – PHASE 1A (16-5136)  
PEMBROKE ROAD TO HOLLYWOOD BOULEVARD BETWEEN S. 52 AND S. 56 AVENUES AND  
US 441  
WASHINGTON PARK / LAWN ACRES SEPTIC TO SEWER CONVERSION –  
PHASE 1A (18-7089)**

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 **Twenty-Seven Million Twenty-Four Thousand Three Hundred Fifty-Five Dollars and 88/100 (\$27,024,355.88).**

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 Florida Statute Section 218.735.

- (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. Notice to Bidders      | 9. Contract                          |
| 2. Instruction to Bidders | 10. Performance Bond                 |
| 3. Proposal               | 11. Payment Bond                     |
| 4. Proposal Bid Form      | 12. General Conditions               |
| 5. Bid Bond               | 13. Supplementary General Conditions |

- |                                      |                    |
|--------------------------------------|--------------------|
| 6. Information Required from Bidders | 14 Addenda         |
| 7 Local Preference                   | 15. Specifications |
| 8. Trench Safety Form                | 16. Drawings       |

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

Signed, sealed and delivered in the presence of:

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

Signed, sealed and delivered in the presence of:

## WHEN THE CONTRACTOR IS A PARTNERSHIP:

WHEN THE CONTRACTOR IS A CORPORATION:

Attest:

\_\_\_\_\_  
Secretary

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

BY: \_\_\_\_\_ (SEAL)  
President

\*\*\*\*\*

APPROVED AS TO FORM:

APPROVED AS TO FINANCE:

By \_\_\_\_\_  
DOUGLAS R. GONZALES  
City Attorney

By \_\_\_\_\_  
STEPHANIE TINSLEY  
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 -

SECTION 00610

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 **WASHINGTON PARK DRAINAGE IMPROVEMENTS (PHASE 1) WATER MAIN REPLACEMENT PROGRAM – (PHASE 1A) PEMBROKE ROAD TO HOLLYWOOD BOULEVARD BETWEEN S. 52 AND S. 56 AVENUES AND US 441 WASHINGTON PARK / LAWN ACRES SEPTIC TO SEWER CONVERSION – (PHASE 1A).**

A copy of said Contract, **No. 19-11042, 16-5136, and 18-7089**, 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 Notice to Bidders, Instructions to Bidders, Proposal, Proposal Bid Form, Basis of Payment, Approved Bid Bond, Trench Safety Form, Information Required from Bidders, 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.

\_\_\_\_\_  
(SEAL)  
Secretary



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:

APPROVED AS TO FINANCE:

By \_\_\_\_\_  
Douglas R. Gonzales  
City Attorney

By \_\_\_\_\_  
Stephanie Tinsley  
Financial Services Director

- END OF SECTION -

SECTION 00620

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 installation of the **WASHINGTON PARK DRAINAGE IMPROVEMENTS - PHASE 1 (19-11042) WATER MAIN REPLACEMENT PROGRAM – PHASE 1A (16-5136) PEMBROKE ROAD TO HOLLYWOOD BOULEVARD BETWEEN S. 52 AND S. 56 AVENUES AND US 441 WASHINGTON PARK / LAWN ACRES SEPTIC TO SEWER CONVERSION – PHASE 1A (18-7089).**

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:

APPROVED AS TO FINANCE:

By \_\_\_\_\_  
Douglas R. Gonzales  
City Attorney

By \_\_\_\_\_  
Stephanie Tinsley  
Financial Services Director

- END OF SECTION -

SECTION 00700  
GENERAL CONDITIONS

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## **SECTION 00700**

### **GENERAL CONDITIONS**

#### **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.

**COMMERCIALLY USEFUL FUNCTION** - shall exist when the Local MBE/SBE is responsible for execution of the work for the contract and is carrying out the responsibilities by actually performing, managing and supervising the work involved. The Local MBE/SBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, and ordering the material, and installing. A commercially useful function is not performed if the role of the qualified Local MBE/SBE is that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of qualified local MBE or qualified local SBE participation.

**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 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.

**LOCAL BUSINESS** – shall mean a business which is duly licensed and authorized to engage in the business at issue and which maintains a permanent principal place of operation with full time personnel within the corporate limits of the City of Hollywood, Florida. A Post Office Box(P.O. Box) shall not be sufficient to constitute a “local business.” The business has the burden of demonstrating that it meets this definition.

**MINORITY** – shall mean a person who is a citizen or lawful permanent resident of the United States and who is a Woman, Black American, Hispanic American, Native American, Asian Pacific American, Subcontinent Asian American or other minorities found to be disadvantaged by the SBA.

**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.

**MINORITY BUSINESS ENTERPRISE** – shall mean a currently functioning business enterprise which (a) is an independent for profit business concern that is at least 51% owned by minority group member(s); (b) is independently operated and controlled by the minority group member(s); (c) demonstrates the capability to perform a line of business; (d) provides a commercially useful function according to the customs and practices of the industry and (e) is qualified by the City of Hollywood, Florida.

**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.

SMALL BUSINESS ENTERPRISE – shall mean a currently functioning business enterprise which (a) is an independent for profit concern that is at least 51% owned by non-minority group member(s); (b) is independently operated and controlled by the non-minority group member(s); (c) demonstrates the capability to perform in a line of business; (d) provides a commercially useful function according to the customs and practices of the industry; and (e) is qualified by the City of Hollywood, Florida.

NOTE: In the event 50% of the local business is owned by a minority group member and 50% of the local business is owned by a non-minority group member, the designation selected on the Local Minority Business Enterprise and Local Small Business Enterprise Program application will be accepted.

SMALL BUSINESS NET WORTH SIZE STANDARD – The size standard for a minority business enterprise and a small business enterprise that participates in the City of Hollywood's Local MBE/SBE Program shall mean an independently owned and operated business concern that employs 50 or fewer permanent full-time employees and whose annual net worth does not exceed \$2,000,000. To determine the net worth, the City shall consider the most recent annual financial statement for the business or; in the case of sole proprietorships, annual financial statements for the business and the business owner. The applicant must provide documentation to demonstrate that the business employs 50 or fewer permanent full-time employees averaged over a two year period.

SPECIFICATIONS - Division 1 through 50 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 15 in the Instructions to Bidders, 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 01 34 00 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 the Proposal Bid Form as modified by any subsequent Change Orders, Unless the CONTRACTOR fails to complete the requirements of the Instructions to Bidders, 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 Section 00 80 00 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 forty 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 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.        Notice to Bidders
3.        Instructions to Bidders
4.        Supplementary General Conditions
5.        General Conditions
6.        Division 1, General Requirements
7.        Technical Specifications
8.        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 NOTICE TO BIDDERS. 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 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:

- A. Claims under Workmen's Compensation, Disability Benefit and other similar employer's liability acts;
- B. Claims for damages because of bodily injury, sickness or disease, or death, or death of his employees;
- C. Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
- D. Claims for damages covered by personal injury liability which are sustained (1) by any person as a result of any offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person;
- E. Claims for damages, other than to the work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and
- F. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

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 21 of the Instruction to Bidders, 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) CONTRACTOR shall, at all times hereafter, indemnify, hold harmless and defend CITY, its agents, servants and employees from and against any claim, demand or cause of action of any kind or nature arising out of error, omission or negligent act of CONTRACTOR, its agents, servants or employees in the performance of services under this Agreement.
- (b) CONTRACTOR further agrees, at all times hereafter, to indemnify, hold harmless and defend CITY, its agents, servants and employees from and against any claim, demand or cause of action of any kind or nature arising out of any conduct or misconduct of CONTRACTOR resulting from the performance of services under the Contract Documents.
- (c) The obligations of the CONTRACTOR above shall not extend to the liability of the City of Hollywood.
- (d) 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 (954) 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, insofar 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 Schedule of Prices Bid 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 Schedule of Prices Bid. 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, 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

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 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 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. Change 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" with the exception that Change 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 any 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, templets, 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 16 of the Instructions to Bidders. 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 cannot 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 10%.

13.8            Retainage:

The amount of retainage with respect to progress payments will be 10% until 50-percent completion of the construction services purchased pursuant to the Contract. After 50-percent completion of the construction services purchased pursuant to the Contract, the CITY shall reduce to 5 percent the amount of retainage withheld from each subsequent progress payment made to the CONTRACTOR. For purposes of this paragraph, the term "50-percent completion" means the point

at which the CITY has expended 50 percent of the total cost of the construction services purchased as identified in the Contract together with all costs associated with existing change orders and other additions or modifications to the construction services provided for in the Contract.

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 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 30 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 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 90 days by the CITY or under an order of court or other public authority, or the CITY fails for 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 -

SECTION 00800  
SUPPLEMENTARY GENERAL CONDITIONS  
INDEX TO ARTICLES

1. Project Schedule	00800-2
2. Insurance Requirements	00800-3
3. Liquidated Damages	00800-5
4. Restricted Area	00800-6
5. Existing Facilities and Structures	00800-6
6. Explosives	00800-6
7. Contract Documents	00800-6
8. Required Notifications	00800-6
9. Notice of Completion	00800-9
10. Prevailing Wage Requirement	00800-6
11. Inspections and Testing During Overtime	00800-7
12. Retainage	00800-7
13. Owner's Contingency	00800-8
14. SRF Funding Requirements	00800-8

## **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)

1. Major Milestone – Substantial Completion<sup>(1)</sup>
2. Major Milestone – Project Closeout<sup>(2)</sup>

518

548

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 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:
  - Record drawings received and accepted by the Engineer
  - The systems shall be tested and demonstrated for the Engineer's acceptance. The Engineer shall determine testing and demonstration sufficient for acceptance.
  - 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 site work 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**

The insurance required by Article 5.6 of the General Conditions shall be as follows:  
Any Sub-Contractor used by the contractor shall supply such similar insurance required of the contractor. Such certificates shall name the City of Hollywood as an Additional Insured.

**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

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.

**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</u>
1. Substantial Completion	518	\$2,000/day
2. Project Closeout	548	\$2,000/day

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/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 rights-of-way 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 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**

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**

*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:**

**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 -



**WASHINGTON PARK DRAINAGE IMPROVEMENTS – PHASE 1 (19-11042)**  
**WATER MAIN REPLACEMENT PROGRAM – PHASE 1A (16-5136)**  
**PEMBROKE ROAD TO HOLLYWOD BOULEVARD BETWEEN S. 52 AND S. 56 AVENUES AND US 441**  
**WASHINGTON PARK / LAWN ACRES SEPTIC TO SEWER CONVERSION – PHASE 1A (18-7089)**

<u>Section</u>	<u>Title</u>
<u>DIVISION 1 - GENERAL REQUIREMENTS</u>	
01010	Summary and Phasing of Work
01025D	Basis of Payment – Drainage
01025WS	Basis of Payment – Water and Sewer
01030	Special Project Procedures
01041	Project Coordination
01042	Septic Clean-Out Location Coordination
01043	Public Involvement
01050	Field Engineering
01070	Applicable Standards and Codes
01200	Project Meetings
01300	Submittals
01400	Testing and Inspection
01410	Contractor's Health and Safety Plan
01500	Construction Considerations
01510	Temporary Utility Service and Staging Area
01520	Maintenance of Facilities and Sequence of Construction
01530	Protection of Existing Facilities
01550	Site Access and Storage
01560	Special Controls
01570	Traffic Regulations and Maintenance of Traffic
01600	Equipment and Materials
01700	Project Closeout
01710	As-Built Data Specs
01720	Project Record Documents and Survey
01740	Permits

<u>DIVISION 2 - SITEWORK</u>	
02000	Water Distribution System
02080	Abandonment, Removal and Disposal of Existing Pipe Removed from Service
02100	Clearing and Grubbing
02140	Dewatering
02160	Temporary Excavation Support Systems
02210	Earth Excavation, Backfill, Fill and Grading
02220	Excavation, Backfill and Compaction
02222	Excavation and Backfill for Utilities and Structures
02223	Abandonment of Pipelines
02225	Contaminated Soils and Groundwater
02260	Finish Grading
02332	Limerock Base
02500	Surface Restoration
02507	Prime and Tack Coats
02510	Asphaltic Concrete Pavement
02515	Water Service Connections and Transfers

**WASHINGTON PARK DRAINAGE IMPROVEMENTS – PHASE 1 (19-11042)**  
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**WASHINGTON PARK / LAWN ACRES SEPTIC TO SEWER CONVERSION – PHASE 1A (18-7089)**

<u>Section</u>	<u>Title</u>
<u>DIVISION 2 – SITEWORK (cont'd.)</u>	
02526	Concrete Pavement, Curb and Walkway
02580	Pavement Marking
02581	Traffic Signs
02582	Raised Retro-Reflective Pavement Markers
02751	Storm Water System Cleaning and CCTV
02752	Removal and Disposal of Material in Storm Water Piping
02753	Preparation, Cleaning, and Root Removal
02762	Televising Sanitary Sewer Systems
02764	Televising Existing Manholes
02774	Wastewater Gravity Collection System
02900	Landscaping
02930	Sodding

<u>DIVISION 3 - CONCRETE</u>	
03051	Leakage Testing of Hydraulic Structures
03111	Concrete Formwork
03151	Concrete Joints, Water Stops, and Sealants
03205	Concrete Sidewalk and Driveways
03210	Concrete Reinforcement
03290	Joints in Concrete
03300	Concrete
03310	Mortar
03350	Concrete Finishing and Curing
03375	Flowable Fill
03420	Precast Reinforced Concrete Structures
03600	Grouting

DIVISION 4 – (NOT USED)

DIVISION 5 – (NOT USED)

DIVISION 6 - (NOT USED)

DIVISION 7 – SEALANTS

07920	Sealants and Caulking
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DIVISION 8 – (NOT USED)

**WASHINGTON PARK DRAINAGE IMPROVEMENTS – PHASE 1 (19-11042)**  
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<u>Section</u>	<u>Title</u>
<u>DIVISION 9 – FINISHES</u>	
09940	Painting
09960	High Performance Coatings
<u>DIVISION 10 – (NOT USED)</u>	
<u>DIVISION 11 – EQUIPMENT</u>	
11312	Collection System Bypass
<u>DIVISION 12 – (NOT USED)</u>	
<u>DIVISION 13 – (NOT USED)</u>	
<u>DIVISION 14 – (NOT USED)</u>	
<u>DIVISION 15 - MECHANICAL</u>	
15001	Water Services and Miscellaneous Fittings
15008	A-2000 PVC Drainage Pipe
15060	Piping and Fittings
15068	PVC Force Main
15100	Valves, General
15102	Tapping Sleeves and Tapping Valves
15115	Check Valves
15995	Pipeline Testing and Disinfection
15997	Polyethylene Encasement
15998	Cathodic Protection

DIVISION 16 – ELECTRICAL (NOT USED)

<u>Appendix</u>	<u>Title</u>
<u>APPENDICES</u>	
A	Geotechnical Reports
B	Permits Obtained by Owner
C	Forms for Private Property Owners
D	DOH Contaminated Sites Listing
E	Subsurface Utility Excavation (SUE) Reports
F	Meter Listing
G	Geotechnical Report

**WASHINGTON PARK DRAINAGE IMPROVEMENTS – PHASE 1 (19-11042)**  
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# **DIVISION 1**

# **GENERAL** **REQUIREMENTS**





## SECTION 01010

### SUMMARY AND PHASING 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. Phasing: The Contractor must adhere to the construction phasing plan, Sheet G-006, including the construction drawings. 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.
- C. 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. Phase 1A:

1. Water Main Replacement Program project is from Rodman Street to Washington Street between S. 56th Avenue and U.S. Route 441, and along S. 56th Avenue from Rodman Street to Washington Street consisting of approximately 16,700 feet of 8-inch, 12-inch, and 16-inch diameter PVC & DIP water mains along local City streets and easements. Existing water mains will be replaced with new PVC or DIP water mains, isolation valves, fire hydrants, backflow devices, and water services. Water meter and boxes will remain. The design will not cross the rights-of-ways (ROWs) at SR 441. Proposed water mains will be connected to existing water mains on the east side of SR 441, on the east side of 56<sup>th</sup> Avenue, on Rodman Street and Washington Street.
2. The sanity sewer system improvements consist of the design of approximately 10,300 linear feet of gravity sewers ranging from 8-inch to 15-inch, 42 sanitary sewer manholes, and laterals with discharge into existing lift stations, in the unsewered areas between Rodman Street and Washington Street between S. 56th Avenue and U.S. Route 441.
3. The drainage system improvements consist of inlets, manholes and French drain systems as provided by the City of Hollywood. Removal of existing drainage structures and pipes where new catch basins are proposed is incidental to the other bid items for the stormwater system improvements. All MOT, dewatering, restoration, as-builts and any incidental related work is to be included in the bid prices.
4. The roadway resurfacing improvements along the Washington Street right-of-way between S. 56<sup>th</sup> Avenue and S. 60<sup>th</sup> Avenue / State Road 7 / US 441 reduces the number of vehicular travel lanes to provide a marked bike path and bi-directional left-turn lane. Appropriate pavement markings and signage is proposed to encourage safe travel while in the thoroughfare.
5. Dewatering activities and bypass pumping that may be required for installations are the responsibility of the contractor. Discharge of dewatering liquids into the City's storm water drainage system is permitted provided the silt is removed via an appropriately sized settling box and returned via a filter bag or filter fabric over the return inlet. The return volume shall not exceed the storm water drainage system capacity, cause excess silting/clogging of the existing storm water system, or cause excess turbidity level in receiving waters. If silts/materials are deposited in the drainage system due to dewater activities, the contractor must remove the deposited materials at no additional cost to the City. Discharge of liquids generated by de-watering activities directly to bodies of water is not permitted.

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 will 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. (811), 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

### 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.
- 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 01025D

### BASIS OF PAYMENT - DRAINAGE

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. Payments to the Contractor shall be made on the basis of 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 or not they are specifically shown 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:

- A. **Item No. 1 – Mobilization Including Bonds (Shall Not Exceed 3% of Bid Item Nos. 3-22):**  
The lump sum price for this item shall be full compensation for all mobilization 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 and installation (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, asbuilt survey, storage, parking, etc., and all other activities necessary for complete mobilization requirement for the contract. **This pay item shall not exceed 3% of the sum of Bid Items No. 3 through 22, excluding any Mobilization/Demobilization, Maintenance of Traffic, Contingency and Allowance**



**Items.**

- B. **Item No. 2 – Maintenance of Traffic (MOT):** 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).
- C. **Item No. 3 – Removal and Disposal of Existing Catch Basin Structure:** Payment for all labor, equipment, materials, for removal of existing catch basin structures. Payment shall be at the unit price bid times the number of catch basin removals completed and accepted by the ENGINEER. The price bid shall be full compensation for each removal, and shall include but not be limited to, removal and disposal of existing complete catch basin assembly in accordance with the Drawings, details and FDOT Index 307.
- D. **Item No. 4 – Removal and Disposal of Existing Solid Pipe:** Payment for all labor, equipment, materials, for removal of existing solid pipe. Payment shall be at the unit price bid times the linear feet of solid pipe removal completed and accepted by the ENGINEER. The price bid shall be full compensation for each linear feet of removal, and shall include but not be limited to, removal and disposal of existing solid pipe and appurtenances in accordance with the Drawings and details.
- E. **Item No. 5 – Grouting and Abandonment of Existing Solid Pipe:** Payment for all labor, equipment, materials and delivery for all work necessary and required to cut piping, install flowable grout fill and cap piping for all existing 4-inch or larger solid pipes shown to be abandoned and grouted in place per the Contract Documents. Payment shall be at the unit price bid times the length of existing solid pipe that is to be grouted and abandoned.
- F. **Item No. 6 – Removal and Disposal of Existing French Drain:** Payment for all labor, equipment, materials, for removal of existing French drain pipe. Payment shall be at the unit price bid times the linear feet of French drain pipe removal completed and accepted by the ENGINEER. The price bid shall be full compensation for each linear feet of removal, and shall include but not be limited to, removal and disposal of existing French drain pipe and appurtenances in accordance with the Drawings and details.
- G. **Item No. 7 – Grouting and Abandonment of Existing French Drain:** Payment for all labor, equipment, materials and delivery for all work necessary and required to cut piping, install flowable grout fill and cap piping for all existing 4-inch or larger French drain pipes shown to be abandoned and grouted in place per the Contract Documents. Payment shall be at the unit price bid times the length of existing French drain pipe that is to be grouted and abandoned.

- H. **Item No. 8 – Furnish and Install 24” x 37” Catch Basins (CB) Structures with Corresponding Frames and Grates:** Payment for all labor, equipment, materials, delivery, testing and commissioning for all work necessary and required to furnish, transport, store, protect, and install new precast reinforced concrete catch basins for solid pipe and French drain and appurtenances. Payment shall be at the unit price bid times the number of 24” x 37” catch basins installed, tested, ready for service and accepted by the ENGINEER. Such payment shall include, but not be limited to, catch basins fabricated by an approved precast concrete provider per the Contract Documents, cast iron frames/grates or rings/covers of the specified sizes/types and cast by an approved foundry in accordance with the Contract Documents, and Brick, mortar and grout for leveling, sealing and finishing. Structures shall be provided with wall openings of the dimensions, diameters, elevations and orientation required to accommodate the new and existing pipe connections shown on the Drawings, and pre-drilled anchor holes for installation of baffles. The work shall include, but not be limited to, survey, clearing and grubbing, swale restoration, locating and protection of all existing utilities, preparation and submittal of shop drawings, installing storm water pollution prevention devices, dewatering, trench excavation, shoring, bedding, backfilling, compaction, removal and disposal of unsuitable/excess fill, removal and disposal of all removed sidewalk/curb and gutter, removal and disposal of all removed asphalt pavement and lime rock base. Payment shall include restoration for all work in sodded areas including select fill, landscaping, irrigation and electrical within roundabouts and swales. For structures located under asphalt pavement, payment shall also include compacted limerock base and 2-inch-thick SP-9.5 Asphaltic Concrete Structural Course for trench restoration. In locations in the Contract Drawings where existing catch basins are shown in the same location as proposed catch basins, this indicates that the existing must be removed and replaced.
- I. **Item No. 9 – Furnish and Install Drainage Baffles:** Payment for all labor, equipment, materials, delivery, storage, testing and commissioning for all work necessary and required to furnish and install new baffles inside new and existing Drainage Structures, including gaskets, anchors and all appurtenances required for installation in accordance with the Contract Documents and where shown on the Drawings. Payment shall be at the unit price bid times the number of drainage baffles furnished and installed.
- J. **Item No. 10 – Furnish and Install Swales:** Payment for all labor, equipment, materials, delivery, re-grading the swale area and installation of Bahia Sod per detail and at locations shown on plans. Watering as needed for 30-days.
- K. **Item No. 11 – Landscape Allowance:** The allowance indicated for this item is to pay for all landscaping requirements as required by the City.
- L. **Item No. 12 – Furnish and Install 18” Diam. French Drain:** Payment for all labor, equipment, materials, delivery, storage, testing and commissioning for all work necessary and required to furnish and install new French Drain, including Coarse Aggregate or Ballast Rock, and Filter Fabric in accordance with the Contract Documents and where shown on the Drawings. Payment shall be at the unit price bid times the linear feet of 18” French drain installed. The work shall include, but not be limited to,

survey, clearing and grubbing, swale restoration, locating and protection of all existing utilities, preparation and submittal of shop drawings, installing storm water pollution prevention devices, dewatering, trench excavation, shoring, bedding, backfilling, compaction, removal and disposal of unsuitable/excess fill, removal and disposal of all removed sidewalk/curb and gutter, removal and disposal of all removed asphalt pavement and lime rock base. Payment shall include restoration for all work in sodded areas including select fill, landscaping, irrigation and electrical within roundabouts and swales. For structures located under asphalt pavement, payment shall also include compacted limerock base and 2-inch-thick SP-9.5 Asphaltic Concrete Structural Course for trench restoration. Payment for road milling and overlay shall be addressed in City Roads Restoration bid items within this Basis of Payment Section.

- M. **Item No. 13 – Furnish and Install 18” Diam. Solid Pipe:** Payment for all labor, equipment, materials, delivery, storage, testing and commissioning for all work necessary and required to furnish and install new solid pipe, including Coarse Aggregate or Ballast Rock, and Filter Fabric in accordance with the Contract Documents and where shown on the Drawings. Payment shall be at the unit price bid times the linear feet of 18” solid pipe installed. The work shall include, but not be limited to, survey, clearing and grubbing, swale restoration, locating and protection of all existing utilities, preparation and submittal of shop drawings, installing storm water pollution prevention devices, dewatering, trench excavation, shoring, bedding, backfilling, compaction, removal and disposal of unsuitable/excess fill, removal and disposal of all removed sidewalk/curb and gutter, removal and disposal of all removed asphalt pavement and lime rock base. Payment shall include restoration for all work in sodded areas including select fill, landscaping, irrigation and electrical within roundabouts and swales. For structures located under asphalt pavement, payment shall also include compacted limerock base and 2-inch-thick SP-9.5 Asphaltic Concrete Structural Course for trench restoration. Payment for road milling and overlay shall be addressed in City Roads Restoration bid items within this Basis of Payment Section.
- N. **Item No. 14 – 12” Type B Stabilized Sub Base:** The quantity to be paid for will be the number of square yards of only the reworked sub base material, conforming to FDOT standards and specifications, placed in the road and compacted to meet the required density and accepted. To be accepted by the City, Engineer and/or Broward County, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto.
- O. **Item No. 15 – 12” Limerock Base:** The quantity to be paid for will be the number of square yards of only the reworked limerock material, adding material as required to regrade, conforming to FDOT standards and specifications, placed in the road and compacted to meet the required density and accepted. To be accepted by the City, Engineer and/or Broward County, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto. Contractor is to provide survey of centerline of installed limerock base before construction of asphalt.
- P. **Item No. 16 – Milling:** This item shall be for the payment of actual field-measured quantity and the unit price shall include the milling of 1” of the entire length of the

project area excluding 56<sup>th</sup> Avenue and the application of Tack Coat to the clean surface at a rate of 0.1 to 0.2 gallons per sq. yd. However, in the event that any utility facility (including water valves, water meters) is required to be raised to the new surface level contractor should contact the correspondent utility and should be responsible to raise manhole covers, re-install all previously existing pavement markings to be thermoplastic striping and raised retro-reflective pavement markers. This item will be paid for at the unit price bid times the number of square yards (SY) that is milled, resurfaced, and accepted by the Engineer, as measured along the limits defined Contract Documents.

- Q. **Item No. 17 – Milling on 56 Avenue:** This item shall be for the payment of actual field-measured quantity and the unit price shall include the milling of 1" of the entire length of 56<sup>th</sup> Avenue (including catch basins) and the application of Tack Coat to the clean surface at a rate of 0.1 to 0.2 gallons per sq. yd. However, in the event that any utility facility (including water valves, water meters) is required to be raised to the new surface level contractor should contact the correspondent utility and should be responsible to raise manhole covers, re-install all previously existing pavement markings to be thermoplastic striping and raised retro-reflective pavement markers. This item will be paid for at the unit price bid times the number of square yards (SY) of 56<sup>th</sup> Avenue that is milled, resurfaced, and accepted by the Engineer, as measured along the limits defined Contract Documents.
- R. **Item No. 18 – Two 1" Lifts of SP-9.5 Asphalt Overlay:** This item includes payment for all labor, material, equipment, tasks, testing, procedures, preparation and appurtenances, including MOT, necessary for installation of leveling course and constructing two lifts of 1-inch thick (final lift) machine laid asphaltic concrete (SP-9.5) surface course for permanent pavement installation over the whole asphalt area within the Right of Way shown on the approved plans. This item will be paid for at the unit price bid times the number of square yards (SY) of asphaltic concrete surface course overlay installed and accepted by the Engineer, as measured along the limits defined in the Contract Documents. The total quantity for this item represents twice the project area in square yards to account for the two 1" lifts. Greater widths are at the Contractors option and expense. The price bid shall be full compensation for furnishing all tasks, materials, labor and equipment required for a complete machine-laid asphaltic concrete surface course installation as well as, as-built survey documentation in hardcopy and electronic form (PDF and AutoCAD), other restorations and other related work not defined in Contract Plan, Agreement and Bid Package. Permanent paving repairs will be in addition to the required flexible pavement restoration along the pipeline installation. The price bid shall be full compensation for furnishing all tasks, materials, labor and equipment required for a complete machine-laid asphaltic concrete surface course installation. Prior to construction of lifts of asphalt, Contractor is to obtain final roadway centerline elevations and cross slopes from the City and/or engineer.
- S. **Item No. 19 – Furnish and Install Signs and Temporary Pavement Markings:** For temporary replacement of existing thermoplastic or painted pavement markings and messages, thermoplastic markings, 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.

- T. **Item No. 20 – Replacement of Signs and Permanent Pavement Markings:** For replacement of existing thermoplastic or painted pavement markings and messages, thermoplastic markings, reflective pavement markers, and other associated permanent pavement markings that are 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 permanent pavement markings will be at no additional cost to the City. Payment shall be at the lump sum amount bid for the entire project.
- U. **Item No. 21 – Replacement of Sidewalks:** This pay items consists of the replacement of existing concrete sidewalks, pedestrian curb ramps and miscellaneous concrete pavement impacted by the installation of the proposed water or sewer system improvements and will be paid for at the unit price bid times the number of linear feet of concrete pavement replaced, completed, ready for service and accepted by the Engineer, Broward County Public Works and/or FDOT. The price bid for this Pay Item shall include, but not be limited to, the following: saw-cutting, removing, hauling, and legally disposing of existing concrete pavement within the envelope of the utility trench typical section (in accordance with the plans or the detail on the plans) and up to the nearest adjacent control joints; protecting any existing concrete pavement to remain; furnishing and installing formwork, concrete, water and admixtures, reinforcing steel, and miscellaneous materials; placing, finishing, curing and protecting the finished concrete surface; Replacement of impacted traffic, signalization, and street lighting lines. Payment shall not be made for existing concrete pavement outside of the envelope of the utility trench excavation in accordance with the typical trench section provided on the plans. All other replacement due to removal or damage as a result of the Contractor's operation shall be at the Contractor's expense. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation and all restoration efforts
- V. **Item No. 22 – ADA Ramps:** Payment for all labor, equipment, materials, delivery, storage, testing and commissioning for all work necessary and required to furnish and install new ADA Ramps on new sidewalks in accordance with the Contract Documents and FDOT Standard Index 522-002. Payment shall be at the unit price bid times the number of ADA Ramps furnished and installed.
- W. **Item No. 23 – Undefined Conditions Allowance:** Included in this allowance 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.

- X. **Item No. 24 – Permit, Licenses, and Fees Allowance:** The allowance indicated for this item is to pay for all permits, licenses, other fees and testing required of the CONTRACTOR per the Contract Documents. The allowance shown on the Schedule of Bid Prices is an estimate of fees required. Payment will be based on the actual permit, license or fee paid directly to agency or Testing Company (for tests that meet criteria only), documented by paid receipts, specifically excluding any labor, mark-up, overhead and profit, administration and other costs involved in obtaining permits or licenses or paying fees or work associated with testing. The tests shall be performed by an independent testing laboratory selected by the CITY of Hollywood. Should any test(s) fail, subsequent tests shall be performed by the same testing laboratory and paid for by the CONTRACTOR at no additional cost to the Contract. Fees specifically excluded from this allowance include but are not limited to re-inspection fees, expired permit fees, standby time, and failed tests.
- Y. **Item No. 25 – 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 payment.
- Z. **Item No. 26 – Demobilization (Shall not be Less than 2% of Bid Item Nos. 3-22):** Payment for completing all other work including but not limited to finish grading, demobilization, site cleanup, pass lamp inspection for the cleaning of project drainage system, final restoration, recording horizontal and vertical locations of proposed improvements as they are constructed, and providing all necessary final record ("as-built") documents; providing post-construction audio- video documentation of the site; finished grading; demobilization; restoration of any site items that do not relate to specific pay items in this bid; site cleanup; and all other activities necessary to complete the contract work as per the Technical Specification and Contract Drawings. **This pay item shall not exceed 2% of the sum of Bid Items No. 3 through 22, excluding any Mobilization/Demobilization, Maintenance of Traffic, Contingency and Allowance Items.**
- AA. **Items No. 27a through 27e – Furnish and Install Alternate Unit Price Bid Items (Allowance):**
1. The basis of payment notes for item No. 8 (as above described) is applicable for this allowance item 27a Furnish and Install 30"x36" Catch Basin (CB) Structures with Corresponding Frames and Gates.
  2. Included in this allowance item (27b) is payment for all labor, equipment and material for all work necessary and required for furnishing and installing 30"x36" storm drainage manhole (up to 10-ft deep), as shown in the plans, traffic rated covers, concrete collars,



new manhole benching, admixtures and all coatings. This work shall include but not be limited to: phasing, clearing and grubbing, grading and regrading; locating, protection and support of all existing utilities, coordination with all utility facility owners for locating (including exploratory excavations) and relocations of existing utilities (by facility owners), temporary or permanent utility relocations or adjustments to provide service as needed for City and other utility facilities; including but not limited to gas mains and all other 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; tree and shrub protection, removal and replacement, trimming; signage protection, existing signs to remain and removal and replacement; Replacement of impacted traffic, signalization, and street lighting lines; Fencing and gate protection and removal and replacement; removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain; Power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement; Irrigation system protection or removal and replacement; Piping trench excavation (including exploratory excavations), sheeting, shoring, bracing; Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, fees and permitting; Connection to existing manholes (core bore or other knock-outs and formwork as needed); Pipes installation, connection and reconnections, clean fill/backfill material, bedding, removal and disposal of unsuitable soils, compaction, Removal of and disposal of pavement of varying thicknesses, excavation, full restoration and cleanup; Sodding, grading and re-grading, driveway removal and restoration in kind, sidewalk and curb removal and restoration; All testing; All necessary accessories required for a complete installation; . Payment shall include restoration for all work in sodded areas including select fill, landscaping, irrigation and electrical within roundabouts and swales. For structures located under asphalt pavement, payment shall also include compacted limerock base and 2-inch-thick SP-9.5 Asphaltic Concrete Structural Course for trench restoration. In locations in the Contract Drawings where existing manholes are shown in the same location as proposed manholes, this indicates that the existing must be removed and replaced. Structures shall be provided with wall openings of the dimensions, diameters, elevations and orientation required to accommodate the new and existing pipe connections shown on the Drawings. All structures must meet all City requirements and details. Other restorations and other related work not defined in other Bid Package Items. Bill of sale, conveyance of new improvements to the City, release of bond and closeout of all permits; The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation. Measurement will be based on each 30"x36" manhole actually furnished and installed.

3. The basis of payment notes for item No. 14 (as above described) is applicable for allowance item 27c 12" Type B Stabilized Sub Base (Reworking).
4. The basis of payment notes for item No. 15 (as above described) is applicable for allowance item 27d 12" Limerock Base (Reworking and Regrading).

5. Included in this allowance item (27e) is payment for all labor, equipment, materials, delivery, storage, testing and commissioning for all work necessary and required to furnish and install pipe (less than 24" diameter) connections to an existing catch basin in accordance with the Contract Documents. Payment shall be at the unit price bid times the number of pipe connections completed and accepted by the Owner.

AB. **Item No. 28 – Public Involvement (allowance):** Payment for Public Involvement shall be made at the allowed shown on the bid form, Section 00301. Payment for Public Involvement shall be full compensations for all activities listed in Section 01043 and includes all items described under Paragraph 1.03.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01025WS

### BASIS OF PAYMENT – WATER AND SEWER

#### 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.

Multiple mobilizations, demobilizations, connections, restoration, maintenance of existing and proposed systems (e.g. water, sewer, stormwater, pavement markings, signage, etc.) are anticipated for this project. Contractor is advised to review carefully all scope of work as it pertains to the Construction Phasing Plan, Sheet G-006, and to budget each phase such that stubouts and future connections are accounted for. No change orders will be accepted by the City for rework or extra hours beyond project work hours stated within the bid documents due to project phasing.

#### 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:

**New Sewer Pay Items and General Payment:**

- A. **Item No. 1 – Maintenance of Traffic (MOT) (Max. 10% Total Sewer Installation 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, 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. 2 through 16, excluding any Mobilization/Demobilization, Maintenance of Traffic, Contingency and Allowance Items.**

- B. **Item Nos. 2 through 10 – Furnish & Install 8” SDR-26 PVC Sanitary Sewer Mains (various depths)** - Payment for all labor, pipe, equipment and material for all work necessary and required for the installation of 8” or 12” SDR 26 PVC sanitary sewer piping and all fittings, and manhole boots for new connections or reconnections as shown on the plans. This work shall include but not be limited to: phasing, clearing and grubbing, grading and regrading; locating, protection and support of **all existing utilities**, coordination with all utility facility owners for locating (including exploratory excavations) 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; Tree and shrub protection, removal and replacement, trimming; Signage protection of existing signs to remain and removal and replacement; Replacement of impacted traffic, signalization, and street lighting lines; Fencing and gate protection and removal and replacement; removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain; Power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement; Irrigation system protection or removal and replacement; Piping trench excavation (including exploratory excavations), sheeting, shoring, bracing; Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, fees and permitting; all bypass piping and pumping equipment including noise attenuation for all pumping equipment, materials and operations; Connections or reconnections to existing manholes (core drill or other knock-outs and formwork as needed) any all other connections and reconnections to the sewer system; Pipe installation, clean fill/backfill material, 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 in kind, sidewalk and curb removal and restoration; All testing including mandrel testing, lamping, Post-CCTV as needed, and other testing; Exfiltration trench, drainfield and drainage piping removal, repair, and replacement; All necessary accessories required for a complete installation; Other restorations and other related work not defined in other Bid Package Items. Bill of sale, conveyance of new improvements to the City, release of bond and closeout of all permits; The price bid shall be full compensation for furnishing all materials, labor and

equipment required for a complete and usable installation. Measurement will be based on the laying length of the pipe in linear feet actually placed as measured along the centerline of the completed pipe, including the length of fittings between the limits shown on the Drawings.

- C. **Item Nos. 11 through 15 – Furnish & Install Manholes (various diameters and depths) -**  
Payment for all labor, equipment and material for all work necessary and required for the installation of new sanitary manholes, as shown in the plans, traffic rated covers, concrete collars, new manhole benching, admixtures and all coatings. In addition, installation of new sewer inflow dishes for the new manhole, as called out on the plans and meeting the City's manufacturer's requirements. This work shall include but not be limited: phasing, clearing and grubbing, grading and regrading; locating, protection and support of **all existing utilities**, coordination with all utility facility owners for locating (including exploratory excavations) and relocations of existing utilities (by facility owners), temporary or permanent utility relocations or adjustments to provide service as needed for City and other utility facilities; including but not limited to gas mains and all other 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; Tree and shrub protection, removal and replacement, trimming; Signage protection of existing signs to remain and removal and replacement; Replacement of impacted traffic, signalization, and street lighting lines; Fencing and gate protection and removal and replacement; removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain; Power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement; Irrigation system protection or removal and replacement; Piping trench excavation (including exploratory excavations), sheeting, shoring, bracing; Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, fees and permitting; all bypass piping and pumping equipment including noise attenuation for all pumping equipment, materials and operations; Connection to existing manholes (core drill or other knock-outs and formwork as needed); Pipe installation, clean fill/backfill material, bedding, removal and disposal of unsuitable soils, compaction, Removal of and disposal of pavement of varying thicknesses, excavation, full trench and surface restoration and cleanup; Sodding, grading and regrading, driveway removal and restoration in kind, sidewalk and curb removal and restoration; Also included in this item is all labor, material and equipment required for removal of existing manhole where there is an existing structure; All testing; Exfiltration trench, drainfield and drainage piping removal, repair, and replacement; All necessary accessories required for a complete installation; Other restorations and other related work not defined in other Bid Package Items. Bill of sale, conveyance of new improvements to the City, release of bond and closeout of all permits; The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation. Measurement will be based on the laying length of the pipe in linear feet actually placed as measured along the centerline of the completed pipe, including the length of fittings between the limits shown on the Drawings.



- D. **Item No. 16 - Furnish & Install 6" SDR-26 PVC Laterals with Cleanouts (50 LF)** - Payment for all labor, equipment and material for all work necessary and required for the installation of the 6" SDR 26 PVC lateral piping (single or double lateral lines up to 50 LF) and all SDR 26 PVC fittings, cleanouts, H2O loaded cleanouts; documenting and coordinating with each property owner on the final location of cleanout regardless of the location shown on the plans, preparation of sketches that show location and invert elevations of each existing building's cleanout/s relative to the building, the location of the existing septic tank/s, the agreed upon location of the proposed cleanout in compliance with Bid Documents, document the feasibility of connecting the proposed cleanout to the existing building's cleanout at a minimum of 1-percent slope; all bypass piping and pumping equipment including noise attenuation for all pumping equipment, and all work needed for lateral and cleanout installations as shown on the plans. This work shall include but not be limited to; phasing, clearing and grubbing, grading and regrading; locating, protection and support of **all existing utilities**, coordination with all utility facility owners for locating (including exploratory excavations) and relocations of existing utilities (by facility owners), temporary or permanent utility relocations or adjustments to provide service as needed for City and other utility facilities; including but not limited to gas mains and all other 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; Tree and shrub protection, removal and replacement, trimming; Signage protection of existing signs to remain and removal and replacement; Replacement of impacted traffic, signalization, and street lighting lines; Fencing and gate protection and removal and replacement; removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain; Power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement; Irrigation system protection or removal and replacement; Piping trench excavation (including exploratory excavations), sheeting, shoring, bracing; Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, fees and permitting; all bypass piping and pumping equipment including noise attenuation for all pumping equipment, materials and operations; Pipe installation, clean fill/backfill material, 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 in kind, sidewalk and curb removal and restoration; All testing including mandrel testing, lamping, Post-CCTV as needed, and other testing; Exfiltration trench, drainfield and drainage piping removal, repair and replacement; All necessary accessories required for a complete installation; Other restorations and other related work not defined in other Bid Package Items. Bill of sale, conveyance of new improvements to the City, release of bond and closeout of all permits; The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation. Measurement will be based on the laying length of the pipe in linear feet actually placed as measured along the centerline of the completed pipe, including the length of fittings between the limits shown on the Drawings.

- E. **Item No. 17 – Owner’s Contingency for Wastewater System (allowance)** - 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.
- F. **Item No. 18 – 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 payment.
- G. **Item No. 19 – Density Testing (allowance)** - 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 coordination 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.
- H. **Item No. 20 – FPL (allowance)** – This allowance indicated for this item is to pay for all coordination, deactivation, activation, existing utilities verifications, protection and support, exploratory excavations, and all other items required for support, protection, guy wires removals and relocations for power systems and infrastructure within the entire project corridor.
- I. **Item No. 21 – Wastewater System Permits, Licenses and Fees (allowance)** - 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. 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 is 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. 22 – As-Builts and Record Drawings (By Land Surveyor approved by City or EOR)** - 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.

**Existing Sewer Replacement Pay Items and General Payment:**

- A. **Item No. 23 – Maintenance of Traffic (MOT) (Max. 10% Total Sewer Replacement 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 or 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. 24 through 27.**
- B. **Item Nos. 24 – Core Drill and Rehabilitate Existing Manholes (various diameters and depths)** - Payment for all labor, equipment and material for all work necessary and required for the rehabilitation of existing sanitary manholes, as shown in the plans, traffic rated covers, concrete collars, manhole bench reconstruction, cleaning, sandblasting, and recoating of interior, pipe connections, and water stops. This work shall include but not be limited to: phasing, clearing and grubbing, grading and regrading; preparation and submittal of shop drawings; dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, fees and permitting; all bypass piping and pumping equipment including noise attenuation for all pumping equipment, materials and operations; connection to

existing manholes (core drill or other knock-outs and formwork as needed); all necessary accessories required for a complete installation; other restorations and other related work not defined in other Bid Package Items. Bill of sale, conveyance of new improvements to the City, release of bond and closeout of all permits. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation. Measurement will be based on the quantity of rehabilitated manholes that are complete as determined by system testing and visual inspections.

C. **Item Nos. 25 – Abandonment of Existing 4-FT Diameter Manholes (various depths) -**

Price and payment will be for all labor, equipment and material for all work necessary and required for abandonment of each existing sanitary manhole and disposal of all materials, and partial removal of existing manholes (manhole ring and cover and top cone section, with remainder of manhole filled sand, and penetrations at bottom of manhole made) and materials removed and/or grout filled as shown on plans. The price bid shall be full compensation and shall include; but not be limited to, coordination with City forces for temporary system deactivation; properly disposing of contents, excavation (including exploratory excavations); disposal of unsuitable or excess material, Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, compaction, removal of and disposal of pavement of varying thicknesses, grading, protection and support of existing utilities, coordination with existing utility providers as necessary, shoring and bracing, exfiltration trench, drainfield and drainage piping removal and replacement, 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; Tree and shrub protection, removal and replacement, trimming; Signage protection of existing signs to remain and removal and replacement; Replacement of impacted traffic, signalization, and street lighting lines; Fencing and gate protection and removal and replacement; removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain, all bypass piping and pumping equipment including noise attenuation for all pumping equipment, cutting and capping, hauling and legal disposal of pipe segments cut and removed, removal of existing manhole covers, frame, rim sections, bricking or rings and cone sections including complete removal and disposal of these items, Removal of and disposal of pavement of varying thicknesses, plugs and plugging of existing mains abandoned at manhole, furnishing and installation of flowable grout including water, all necessary environmental permitting and compliance for disposal of piping as necessary including any fees. This item also includes the proper disposal of removed materials and all necessary restoration efforts and all restoration items necessary for a complete abandonment of each manhole.

D. **Item No. 26 – Abandonment of Existing Sanitary Sewer Mains** – Payment for all labor, equipment and material to abandon existing sanitary sewer system of all diameters and depths within the project limits. Payment shall be per linear feet for sewer mains with associated laterals and cleanouts to be abandoned in place (laterals are considered

incidental to LF of mains), completed and accepted. The price bid shall be full compensation and shall include; but not be limited to, coordination with City forces for temporary system deactivation; cutting and capping, hauling and legal disposal of pipe segments cut and removed; including complete removal and disposal of these items, furnishing and installing plugs as necessary for abandonment, furnishing and installing flowable grout and water, exit and relief and/or viewing ports in mains, pumping flowable grout to completely fill existing mains that are being placed out of service in accordance with the specifications, compaction, grading, 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, shoring and bracing, Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation, exfiltration trench, drainfield and drainage piping removal, repair, and replacement; Replacement of impacted traffic, signalization, and street lighting lines; all necessary environmental permitting and compliance for disposal of piping as necessary including any fees. This item also includes the proper disposal of removed materials and all necessary restoration efforts. The price bid shall be full compensation for furnishing all materials, labor and equipment required for complete cutting, capping, grouting, abandonment, and taking the existing mains and manholes out of service and all necessary restoration efforts. Payment shall be at a lump sum amount for the entire project. Payment shall be made for each successful linear footage of abandonment.

- E. **Item No. 27 – Bypass Pumping (15- inch)** - Payment for all labor, equipment, material, testing, permits and fees, and appurtenances for all work necessary and required for bypass pumping and piping for 15" diameter sanitary sewer. This item includes but is not limited to tankers, pumps, flow control, noise attenuation to meet specifications and jurisdictional requirements for bypass pumping, bypass flow ramps or plates or cutting in of temporary piping as needed for bypass operations including temporary asphalt and all restoration, preparation of bypass plan, submittal, review, and approval. Also include is all necessary accessories required for a complete installation; Other restorations and other related work not defined in other Bid Package Items. Measurement of this pay item will be based on the number of days of installed bypass pumping and piping in operation.
- F. **Item No. 28 – Owner's Contingency for Wastewater System (allowance)** - 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.
- G. **Item No. 29 – Density Testing (allowance)** - 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 coordination 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.

- H. **Item No. 30 – FPL (allowance)** – This allowance indicated for this item is to pay for all coordination, deactivation, activation, existing utilities verifications, protection and support, exploratory excavations, and all other items required for support, protection, guy wires removals and relocations for power systems and infrastructure within the entire project corridor.
- I. **Item No. 31 – Wastewater System Permits, Licenses and Fees (allowance)** - 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. 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. 32 – As-Builts and Record Drawings (By Land Surveyor approved by City or EOR)** - 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. 33 – Public Involvement (allowance)** - Payment for Public Involvement shall be made at the allowance shown on the bid form, Section 00301. Payment for Public Involvement shall be full compensations for all activities listed in Section 01043 and includes all items described under Paragraph 1.03.

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.

**Water Main System Pay Items and General Payment:**

- A. **Item No. 34 – Maintenance of Traffic (MOT) (Max. 10% Total Water 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. 35 through 60.**
- B. **Item Nos. 35 through 40 – Furnish & Install Water Mains (various diameters and materials)** - 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.

- C. **Item Nos. 41 through 44 – Furnish & Install Domestic DIP Tees (various sizes)** - 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.

D. **Item Nos. 45 through 46 – Furnish & Install Domestic DIP Crosses (various sizes) -**

Payment for all labor, equipment and material for all work necessary and required for the installation of new crosses, 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 crosses, 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 re-grading, 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. 47 – Furnish & Install 8"x6" Domestic DIP Reducer** - Payment for all labor, equipment and material for all work necessary and required for the installation of new reducers, 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 crosses, 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 re-grading, 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 Nos. 48 through 50 – Furnish & Install Gate Valves (various sizes)** - 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.

- G. **Item Nos. 51 and 52 – Fire Line Reconnections (various sizes)** - Payment for all labor, equipment and material for all work necessary and required for the removal of existing fire line connections and for new fire line reconnections from the new water main or service lines to the existing fire line and system. The price bid shall be full compensation for each reconnection; including but not limited to; domestic ductile iron pipe and fittings, steel guard posts/bollards, concrete slab and concrete collar. This work shall also 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, removal, disposal, and replacement of sod, curb, gutter, pavement and sidewalks necessary for the removal and reconnections, 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, pipe (Class 52 domestic ductile iron), valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, all domestic ductile iron fittings for a complete installation whether shown or not shown), 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 pipe, fittings and valves, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced 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, removal and restoration, bacteriological testing, pressure testing, permitting and fees to meet all fire department requirements 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.

- H. **Item No. 53 – Furnish & Install Fire Hydrant Assemblies (Includes Pipes, Fittings, Valves and Caps)** - Payment for all labor, equipment and material for all work necessary and required for the installation of fire hydrant assemblies per standard detail and City Specifications. The price bid shall be full compensation for each hydrant assembly; including but not limited to; hydrant barrel assembly, 6" fire hydrant isolation gate valve, 6" domestic ductile iron pipe and fittings, hydrant main, steel guard posts/bollards, concrete slab and concrete collar as needed. 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, removal, disposal, and replacement of sod, curb, gutter, pavement and sidewalks necessary for the removal and replacement of fire hydrant assemblies, painting of fire hydrant, bollards, 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, pipe (Class 52 domestic ductile iron), valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars, all domestic ductile iron fittings for a complete installation whether shown or not shown), 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 pipe, fittings and valves, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced 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, 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. Also included is capping/abandonment of the existing hydrant line, as applicable, as well as salvaging, removal, and transport of the existing hydrant removed to the City's designated facility. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- I. **Item No. 54 – Remove Existing Fire Hydrant Assemblies** - Payment for all labor, equipment and material for all work necessary and required for the removal of fire hydrant assemblies per standard detail and City Specifications. The price bid shall be full compensation for each fire hydrant assembly and all associated appurtenances removed; including but not limited to; hydrant barrel assembly, pipe and fittings (Class 52 domestic ductile iron), hydrant main, steel guard posts/bollards, sheer plate, concrete slab and concrete collar as needed. 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, removal, disposal, and replacement of sod, curb, gutter, pavement and sidewalks necessary for the removal and replacement of fire hydrant assemblies, 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, valves, valve boxes, valve box(es) extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars, and all other items required for a complete installation whether shown or not shown, 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 pipe, fittings and valves, metallic tracer wire, line locator, identification markers, clean fill/backfill material, reinforced concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, 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, 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. Also included is capping/abandonment of the existing hydrant line, as applicable, as well as salvaging, removal, and transport of the existing hydrant removed to the City's designated facility. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

J. **Item No. 55 – Water Service Removal and Replacement (Up to 1”) (within Right-of-Way)**

- Payment for the Water Service Removal and Replacement shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the single, double, triple, or quadruple water service lines and connections to proposed or existing water mains, including service or band saddle, all fittings, corporation stop, DR-9 polyethylene water service piping to replace services of varying materials and PVC and/or black iron casing pipe, curb stops, check valves, and connecting existing or relocated meters to the proposed or existing water mains within the public Right-of-Way(s). Existing water service line abandonment is also included in this cost and includes abandoning the water services on existing water lines, placed out of service at the curb stop, cutting and capping the service lines and any incidental removal of the existing water service piping, “U-branches” and header piping/fittings (meter banks). 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), 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, 316 stainless steel nuts, washers and bolts, blow off valves and appurtenances, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced 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, 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.

K. **Item No. 56 – Water Service Removal and Replacement (> 1”) (within Right-of-Way) -**

Payment for the Water Service Connection shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the single, double, triple, or quadruple water service lines and connections to proposed or existing water mains, including service or band saddle, all fittings, gate valve, valve box, riser, and cover, DR-9 polyethylene water service piping to replace services of varying materials and PVC and/or black iron casing pipe, curb stops, check valves, and connecting existing or relocated meters to the proposed or existing water mains within the public Right-of-Way(s). Existing water service line abandonment is also included in this cost and includes abandoning the water services on existing water lines, placed out of service at the curb stop, cutting and capping the service lines and any incidental removal of the existing water service piping, “U-branches” and header piping/fittings (meter banks) as needed. 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, 316 stainless steel nuts, washers and bolts, restraining devices for proposed and existing water mains, blow off valves and appurtenances, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced 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, 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.

- L. **Item No. 57 – Water Meter Reconnections (Up to 1”)** - Payment for the water meter reconnections shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the single, double, triple, or quadruple water service lines and connections, including service or band saddle, all fittings, resetters, corporation stop or gate valve, valve box, riser, and cover, DR-9 polyethylene water service piping to replace services of varying materials and PVC and/or black iron casing pipe, curb stops, check valves, meter vault/box, cover, and concrete collar (if required), and connecting existing or relocated meters to the proposed or existing water mains within the public Right-of-Way(s). Existing water service line abandonment is also included in this cost and includes abandoning the water services on existing water lines, placed out of service at the curb stop, cutting and capping the service lines and any incidental removal of the existing water service piping, “U-branches” and header piping/fittings (meter banks) as needed. 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, 316 stainless steel nuts, washers and bolts, blow off valves and appurtenances, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced 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, 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.

- M. **Item No. 58 – Water Meter Reconnections (>1")** - Payment for the water meter reconnections shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the single, double, triple, or quadruple water service lines and connections, including service or band saddle, all fittings, resetters, corporation stop or gate valve, valve box, riser, and cover, DR-9 polyethylene water service piping to replace services of varying materials and PVC and/or black iron casing pipe, curb stops, check valves, meter vault/box, cover, and concrete collar (if required), and connecting existing or relocated meters to the proposed or existing water mains within the public Right-of-Way(s). Existing water service line abandonment is also included in this cost and includes abandoning the water services on existing water lines, placed out of service at the curb stop, cutting and capping the service lines and any incidental removal of the existing water service piping, "U-branches" and header piping/fittings (meter banks) as needed. 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, 316 stainless steel nuts, washers and bolts, blow off valves and appurtenances, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced 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, 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.

- N. **Item No. 59 – Place Out of Service Existing Water Mains of Various Sizes** - For abandoning in place all existing water mains, hydrant mains and services 2" and larger in diameter within the project limits (unless otherwise specified on the plans), payment shall be at the unit price bid times the number of linear feet of pipe to be placed out of service, completed and accepted by the Engineer. The price bid shall be full compensation for each linear foot of pipe placed out of service, and shall include but not be limited to: coordination with City forces for temporary system deactivation; notifying affected property owners/occupants; excavation (including exploratory excavation); locating, protection and support of **all existing utilities**, Replacement of impacted traffic, signalization, and street lighting lines; coordination with all utility facility owners for locating and relocations of existing utilities (by facility owners), temporary utility relocations as needed for City facilities, cutting, hauling and legal disposal of pipe segments cut and removed; removal of valve boxes and covers and delivering them to the Department of Public Utilities yard; furnishing and installing plugs; blow off valves and appurtenances, furnishing flowable grout, pumping equipment and materials, installing grout and exit ports in mains, and pumping flowable grout to completely fill existing mains 6" and larger in diameter that are being placed out of service, in accordance with the specifications. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete cutting, capping, grouting, abandonment, and taking the existing water mains out of service and all restoration efforts. Payment shall be at a lump sum amount for the entire project.
- O. **Item No. 60 – Furnish & Install Line Stops (various sizes) (allowance)** - 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.

- P. **Item No. 61 - Furnish & Install Backflow Preventer (various sizes) (allowance)** - Payment for all labor, equipment, materials, delivery, testing, submittals, certification, installation and commissioning of all work necessary and required to furnish and install a lead free, reduced pressure zone backflow preventer assembly (RPZ). RPZ to be installed on all commercial water service lines that do not have a backflow preventer in good working condition or if the backflow is currently located within private property. Backflow preventer installation must comply with the latest Florida Building Codes. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation for each backflow preventer satisfactorily installed. The City reserves the right to award any, all, or none of the money associated with this allowance.
- Q. **Item No. 62 – Owner’s Contingency for Water System (allowance)** - 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.
- R. **Item No. 63 – Density Testing (allowance)** - 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 coordination 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.

- S. **Item No. 64 – FPL (allowance)** – This allowance indicated for this item is to pay for all coordination, deactivation, activation, existing utilities verifications, protection and support, exploratory excavations, and all other items required for support, protection, guy wires removals and relocations for power systems and infrastructure within the entire project corridor.
- T. **Item No. 65 – Water System Permits, Licenses and Fees (allowance)** - 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. 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.
- U. **Item No. 66 – As-Builts and Record Drawings (By Land Surveyor approved by City or EOR)** - 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.
- V. **Item No. 67 – Public Involvement (allowance)** - Payment for Public Involvement shall be made at the allowed shown on the bid form, Section 00301. Payment for Public Involvement shall be full compensations for all activities listed in Section 01043 and includes all items described under Paragraph 1.03.



**Washington Street Pay Items:**

- A. **Item No. 68 – Milling (1")** - Payment for all labor, equipment and material for all work necessary and required for milling 1" of existing pavement of various thicknesses, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto for Washington Street, 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 1" 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.
- B. **Item No. 69 – Resurfacing (1")** - Payment for all labor, equipment and material for all work necessary and required for resurfacing of 1" of existing pavement of various thicknesses, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto for Washington Street. 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.
- C. **Item No. 70 – Temporary Pavement Markings and Signage** - For temporary paint 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.
- D. **Item No. 71 – Permanent Pavement Markings and Signage** - For 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.
- E. **Item No. 72 – Other Restoration Items** - For temporary and permanent replacement in-kind or better condition of existing driveways, swales, trees, and other appurtenances or

improvements existing in and abutting the right-of-way, or as obliterated by the Contractor's operation, or as indicated on the plans. Payment shall be at the lump sum amount bid for the entire project.

**General Payment:**

- F. **Item No. 73 – Mobilization (Phase 1) (Max. 1%)** – The lump sum price for this item shall be full compensation for all mobilization activities, including but not limited to 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 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 requirement for the contract. **This pay item shall not exceed 1% of the sum of Bid Item Nos. 2 through 16, 24 through 27, 35 through 60, and 68 through 72.**
- G. **Item No. 74 – Bonds & Insurance (Phase 1)** – The lump sum price for this item shall be full compensation for bonds and insurance.
- H. **Item No. 75 – Mobilization (Phase 2) (Max. 1%)** – The lump sum price for this item shall be full compensation for all mobilization activities, including but not limited to 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 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 requirement for the contract. **This pay item shall not exceed 1% of the sum of Bid Item Nos. 2 through 16, 24 through 27, 35 through 60, and 68 through 72.**
- I. **Item No. 76 – Bonds & Insurance (Phase 2)** – The lump sum price for this item shall be full compensation for bonds and insurance.
- J. **Item No. 77 – Mobilization (Phase 3) (Max. 1%)** – The lump sum price for this item shall be full compensation for all mobilization activities, including but not limited to 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 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 requirement for the contract. **This pay item shall not exceed 1% of the sum of Bid Item Nos. 2 through 16, 24 through 27, 35 through 60, and 68 through 72.**
- K. **Item No. 78 – Bonds & Insurance (Phase 3)** – The lump sum price for this item shall be full compensation for bonds and insurance.

- L. **Item No. 79 – Locating Septic Systems** – Payment for all labor, materials, and equipment for all work necessary and required to locate septic systems on each property, including: applications, service/review fees, coordination, and reproduction for septic system records from the Florida Department of Health / Florida Department of Environmental Protection; surveying, engineering, architecture, and contractor services; marking, flagging, surveying, geocaching, and record keeping of located septic systems; and all other costs associated with locating septic systems.
- M. **Item No. 80 – Vehicle Towing (allowance for up to 100 tows)** – For vehicle towing and relocation in the case that the vehicle is impeding construction progression and owner of vehicle is not found. Vehicle Towing company shall be licensed in Broward County and be approved by the City. Only vehicles with up to 3-axes shall be towed. Contractor shall provide area to store towed vehicles.
- N. **Item No. 81 – Obtaining and Providing Uniformed Police Officers (allowance)** - Allowance Account for all work associated with obtaining and providing the services of uniformed police officers as needed or as directed by the ENGINEER and the City. Amount paid for this item shall be equal to the invoice amounts provided by the City. Any funds in this item not utilized for the explicit use of onsite uniformed police officers shall be returned to the City. Contractor must use City of Hollywood police officers unless otherwise directed by the City.
- O. **Item No. 82 – Demobilization (Phase 1) (Min. 1%)** – The lump sum price for this item shall be full compensation for all demobilization activities, including but not limited to 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 demobilization requirement for the contract. **This pay item shall be a minimum 1% of the sum of Bid Item Nos. 2 through 16, 24 through 27, 35 through 60, and 68 through 72.**
- P. **Item No. 83 – Demobilization (Phase 2) (Min. 1%)** – The lump sum price for this item shall be full compensation for all demobilization activities, including but not limited to 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 demobilization requirement for the contract. **This pay item shall be a minimum 1% of the sum of Bid Item Nos. 2 through 16, 24 through 27, 35 through 60, and 68 through 72.**
- Q. **Item No. 84 – Demobilization (Phase 3) (Min. 1%)** – The lump sum price for this item shall

be full compensation for all demobilization activities, including but not limited to 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 demobilization requirement for the contract. **This pay item shall be a minimum 1% of the sum of Bid Item Nos. 2 through 16, 24 through 27, 35 through 60, and 68 through 72.**

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 FIELD VERIFICATION OF EXISTING SEPTIC TANK LOCATIONS AND TIE-IN ELEVATIONS

- A. Contractor will be required to field verify all existing septic tank locations, confirm the discharge location and elevation of the sanitary piping exiting the various buildings/residences, and coordinate and plan for the piping alignment and subsequent connection location of the new cleanout at the right of way (ROW). **All field verifications must occur prior to construction of the sanitary sewer system such that any issues with the elevation of the sewer system and/or any conflicts are identified and brought to the Engineer's and City's attention.**

##### 1.02 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 and account for the Construction Phasing Plan shown on Sheet G-006. Contractor shall submit a detailed phasing and project construction sequencing schedule and plan as required.

##### 1.03 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. Work hours are from 7 P.M. to 7 A.M. and 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.

#### 1.04 ASBESTOS PIPE REMOVAL AND DISPOSAL PROCEDURES

- A. General. The Contractor will be responsible for permitting, removal and disposal of asbestos-cement (AC) pipe segments required to perform the Work as shown on the Drawings. The following paragraphs briefly summarize permitting, field procedures and disposal activities related to the AC pipe. In these discussions, certain local, state and federal laws have been referenced. The Contractor must comply with all applicable local, state and federal laws/regulations whether or not such laws/regulations are referenced in these specifications.

The Contractor shall provide evidence of experience of proper procedures in removal, handling and disposal of asbestos-cement pipe materials within the past five (5) years. References from at least three completed projects shall be provided at the Preconstruction Conference. If the Contractor proposes to utilize the services of a duly qualified Subcontractor for this portion of the work, these same requirements shall be met.

- B. Permitting. The Contractor shall apply for and obtain all permits related to removal of the AC pipe segments. In accordance with Florida Department of Environmental Protection (FDEP) Rule 62-257.30 1 of the Florida Administrative Code (FAC), the Contractor must submit a "Notice of Asbestos Removal Project" form with a copy to the Engineer. The Contractor will submit the form to FDEP in a timely manner in accordance with the schedule contained in Rule 62-257. The agencies that may require permits for this project are not necessarily limited to the FDEP.
- C. Field Procedures. The Contractor is responsible for all procedures, including safety and health procedures, which will be used when handling AC pipe segments. The Contractor's handling of AC pipe segments shall be in conformance with 29 CFR 1926.58 (OSHA Safety and Health Standards).
1. Cutting of AC pipe shall be done in conformance with the recommended practices contained in the American Water Works Association's (AWWA) Manual No. M-16. Cutting methods should be used which minimize the production of airborne dust.
- D. Preparation of Transport of Materials. The Contractor will remove the pipe sections from the ground in whole pieces without fracturing, breaking or otherwise damaging pipe. The AC pipe segments shall be carefully loaded onto the transport vehicle without damaging the pipe. The transport vehicle shall totally enclose the AC pipe segments so that wind and rain cannot disperse dust from the pipe material. Transport of the AC pipe segments shall also meet the requirements of the waste disposal agency.
- E. Waste Disposal. As stated in Rule 62-701.520(3), the FDEP indicates that asbestos containing waste materials can be accepted at a permitted Class I, II or III landfill. The regulations also indicate that the waste generator (the Contractor) shall make arrangements with the landfill operator before disposal of the asbestos containing waste materials and inform the operator of the quantity of the waste and the scheduled date

the shipment will arrive at the landfill. The Contractor shall provide the Engineer and the Owner a manifest immediately following disposal.

#### 1.05 ADDITIONAL TRAFFIC REQUIREMENTS

- A. Contractor will be responsible for submittal of Maintenance of Traffic (MOT) plans per to meet all jurisdictional authorities requirements for submittals within their right-of-way limits. MOT will also be submitted for all construction proposed within the ROW limits. Contractor shall be the responsible party relating to all aspects of ROW 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.
- B. **Night work and/or weekend work is required for the entire project area. 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.

#### 1.06 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.
- C. All calculations, reviews, and permit approvals are to be provided by the Contractor at no additional cost to the City.



#### 1.07 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. The costs for such test pits and grouting of the test pits and/or holes shall be borne by the Contractor.

#### 1.08 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.

#### 1.09 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.

#### 1.10 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. Adjustments from time to time may be required in the Contractor's work location and/or schedule upon notice provided by the Owner.

#### 1.11 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.

#### 1.12 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.

#### 1.13 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).

#### 1.14 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 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.

#### 1.15 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.

#### 1.16 ENVIRONMENTAL PROTECTION

- A. General:
  - 1. Contractor shall comply with all Federal, State and Local laws and regulations controlling pollution of the environment. He 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.

#### 1.17 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.

#### 1.18 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.
- C. 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.

#### 1.19 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.

#### 1.20 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. All connections will 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.

#### 1.21 HAZARDOUS LOCATIONS

- A. The Contractor shall be responsible for identification of hazardous locations, appropriate construction methods, and all other safety issues.

#### 1.22 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.

#### 1.23 DRAINFIELD AND FRENCH DRAIN RESTORATION

- A. Contractor shall restore all existing and new drainfields and French drains to equal or better condition if impacted during construction efforts. Laterals, services or other impacts to drainfields and French drains must follow FDOT standards and specifications for restoration.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

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## 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 Owner/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 Owner. 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 prepared by the Contractor prior to commencement of work and must adhere to the Construction Phasing Plan, Sheet G-006, provided in the construction drawings.

#### 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 Owner 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 Owner. 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 01042

### SEPTIC CLEAN-OUT LOCATION COORDINATION

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENTS

A This section describes the minimum steps and procedures, as amended by the CITY and EOR, that the contractor must perform to demonstrate that a good faith effort was made to coordinate the location of the proposed clean-out with each property owner(s). The minimum steps to demonstrate this good faith effort are as follows:

1. Notification of Construction Project

- a) Property owners shall be notified at 90 days and again at 60 days prior to the construction of the proposed clean-out to service their property.
- b) Notification must be addressed to the homeowner and contain information on the construction activities proposed within their neighborhood, and the need for the homeowner to be involved in deciding on which side of their driveway or building structure, to locate the proposed clean-out for ease of future connection. The content of the notification must be coordinated and approved by the City.
- c) Notification shall be carried out via US-Certified Mail with return receipt.

2. Field Coordination

- a) At least 45 days prior to construction of proposed clean-out, contractor shall hold a field coordination meeting.
  - 1) Field Coordination Meeting shall be attended by Property Owner, Contractor, and representative of the City.
- b) At the field coordination meeting the contractor and property owner shall agree on the location of the proposed clean-out.
- c) Agreed upon location of proposed clean-out shall be documented via photographs and sketches by the contractor (see septic clean-out location coordination form below).

3. Memorialization

- a) At least 30 days prior to the construction of the proposed clean-out, contractor

shall complete and notarized "Septic Clean-Out Location Coordination Form", including obtaining property owner's signature and notarization of document. This form must be fully executed prior to installing the clean-out.

- B If no response is received from the homeowner based on the activities outlined in this section, the Contractor is required to coordinate with the City prior to installation of the clean-out.

## SEPTIC CLEAN-OUT LOCATION COORDINATION FORM

I, \_\_\_\_\_,

am the owner of the property located at \_\_\_\_\_

\_\_\_\_\_

consent to have the proposed septic clean-out installed on the right / left side of the subject property as indicated in the sketch below.

Mark one: ☐ Left Side

Check one: ☐ Main Road  
☐ Alley Way

☐ Right Side

The diagram illustrates the property layout for septic clean-out installation. A horizontal dashed line at the top represents the 'Right of Way'. Below this line, a central rectangular area represents the property. To the left of the property is a vertical dashed line labeled 'Property line'. To the right of the property is another vertical dashed line labeled 'Property line'. A box labeled 'Left Side' is positioned to the left of the property, and a box labeled 'Right Side' is positioned to the right of the property. The central property area contains a box for 'Property address:' with two lines for input, followed by 'Hollywood, FL' and a line for input. A 'Right of Way' label with an arrow points to the top dashed line.



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Pursuant to Section 117.05(13)(a), Florida Statutes, the following notarial certificate is sufficient for an oath or affirmation:

STATE OF FLORIDA

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

Sworn to (or affirmed) and subscribed before me by means of [ ] physical presence or [ ]  
online notarization, this (numeric date) \_\_\_\_\_ day of (month)\_\_\_\_\_, (year)\_\_\_\_\_,  
by (name of person making statement)\_\_\_\_\_

(NOTARY SEAL)

(Signature of Notary Public-State of Florida)

(Name of Notary Typed, Printed, or Stamped)

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

Type of Identification Produced\_\_\_\_\_

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

- END OF SECTION -

## SECTION 01043

### PUBLIC INVOLVEMENT

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENTS

- A The Contractor shall hire a **Public Relations Firm** to be responsible for initiating, leading, and executing all the arrangements and accommodations to assist the City with public involvement activities throughout the construction duration. The Contractor must request and receive approval from the City prior to formalizing any final arrangements or disseminating any information to the public.
- B The **Public Relations Firm** shall identify and assign a public involvement officer (PIO) and make this person available to the residents and City for planning and executing all public involvement activities. The role of the PIO is to liaise, coordinate, and work for the City's public involvement staff and their goals and objectives, which includes but is not limited to making residents affected by construction aware of the project and keeping them informed of project progress as construction progresses through completion. The PIO shall provide their contact information (telephone number and e-mail) for the residents to contact them for questions and concerns.
- C The **Public Relations Firm** shall develop a public involvement plan for review and approval by the City, which will include the following at a minimum:
1. Outline a plan of action for initiating contact, promoting the project's benefits, and keeping affected residents informed of construction progress and other important information, throughout the duration of construction activities.
  2. Identify residents that will be directly and indirectly impacted by construction.
    - a) Develop a database with contact information (names and addresses) of homeowners and residences affected directly and indirectly by construction.
    - b) **Establish a Project Hotline and a social media platform to maintain residents informed of construction progress and other important information, throughout the duration of construction activities.**
    - c) **Contractor shall send notice via certified mail to each property regarding in-person meeting for sewer / water connection.**
    - d) **Keep a record of residents' and business owners' complaints and their resolutions.**

3. Identify strategies and resources necessary to mail newsletters/fact sheets/flyers to each homeowner on a regular basis (not exceeding 45 calendar day intervals).
    - a) The newsletters/fact sheets/flyers should provide residents with an update on overall project progress, updates on work completed, work in progress, work pending, and other information critical to maintaining safety.
    - b) The first round of newsletters/fact sheets/flyers must be mailed to all homeowners within 35 calendar days after notice to proceed. This will provide homeowners with early notification of pending construction activities.
  4. Organize monthly public meetings (in-person and virtual) to update the public on construction progress.
    - a) Coordinate with the residents and City staff and provide a public meeting location.
    - b) Prepare meeting agenda, record attendance at public meetings, and prepare meeting minutes for distribution.
    - c) Prepare meeting materials to show critical project information including but not limited to display boards, PowerPoint presentations, handouts, etc.
    - d) PIO must be available to assist the City in responding to questions and concerns from the public.
    - e) The PIO shall arrange for the first Thursday of each month at 6:00 P.M.
  5. The PIO shall manage, investigate, and prepare responses in a timely manner to complaints received from the public.
- D An allowance has been established for Public Involvement services for the duration of the project. The Contractor must include a detailed and scheduled cost proposal for providing all the services listed in the public involvement plan. The Contractor shall invoice against this allowance in accordance with their cost proposal and proposed schedule over the duration of the construction. Invoices must include all backup information for labor, materials, and equipment. The City will process this monthly payment on condition that the PIO has completed all the tasks defined in this specification.
- E If the Contractor for any reason does not adhere to the agreed-upon overall baseline construction schedule to complete the construction of the project, then Public Involvement services as defined above must continue for the additional construction time at no additional cost to the City.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

- 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

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## SECTION 01070

### ABBREVIATIONS

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. Wherever in these specifications references are made to the standards, 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. 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.

##### 1.02 ABBREVIATIONS AND ACRONYMS

AAMA	Architectural Aluminum Manufacturer's Association
AASHTO	American Association of the State Highway and Transportation Officials
ACI	American Concrete Institute
ACOE	Army Corps of Engineers
ACPA	American Concrete Pipe Association
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGMA	American Gear Manufacturer's Association
AHGDA	American Hot Dip Galvanizers Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APHA	American Public Health Association
APWA	American Public Works Association
ASA	Acoustical Society of America
ASAE	American Society of Agriculture Engineers
ASCE	American Society of Civil Engineers

ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASMM	Architectural Sheet Metal Manual
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BCDPEP	Broward County Department of Planning and Environmental Protection (formerly BCDNRP)
BCEPD	Broward County Environmental Protection Department (formerly BCDPEP)
BCEPGMD	Broward County Environmental Protection and Growth Management Department (formerly BCEPD)
BCHD	Broward County Health Department
BHMA	Builders Hardware Manufacturer's Association
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
FBC	Florida Building Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FS	Federal Specifications
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Systems and Automation
ISO	International Organization for Standardization
MBMA	Metal Building Manufacturers Association
MTI	Marine Testing Institute
NAAM	National Association of Architectural Metal Manufacturers

NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Testing
NRCA	National Roofing Contractors Association
NSF	National Science Foundation
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
SFWMD	South Florida Water Management District
UL	Underwriters Laboratories, Inc.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

END OF SECTION

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## 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. If the Contractor is not on track for their overall schedule, a recovery schedule will be required to be provided.

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 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>	As-builts/Record drawings
2 originals signed and sealed	
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 Start Date, Total Float, and End Date. Each schedule and report shall include the following minimum items.
1. Activity Numbers
  2. Estimated Duration
  3. Activity Description
  4. Start Date (Calendar Dated)
  5. End Date (Calendar Dated)
  6. Status (whether critical)



7. Estimated Cost of The Activity
  8. 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 workday 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, in accordance with Section 01025, 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:
    - a. 01 - Product Data, Specifications, Cut Sheets, Manufacturers certification or approval letters
    - b. 02 - Shop Drawings
    - c. 03 - Product Samples and Mock-Ups
    - d. 04 - Special requirements as required in the contract documents
    - e. 05 - As-Built Drawings
    - f. 06 - Warranties
    - g. 07 - O&M
    - h. 08 - Spare Parts

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

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-builts 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 other format approved by the Engineer. Drawings shall be submitted in AutoCad, Microstation, or other 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

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## SECTION 01400

### TESTING AND INSPECTION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- 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 him 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. Gravity Sewer Testing may include but is not limited to lamping, deflection, infiltration, exfiltration, and visual inspection of manhole structure and pipes connections. Lamp test will only be considered to pass if the full circle is seen during the test. If the lamping test does not pass, a sewer deflection test shall be performed, refer to Section 02531 Sewer Deflection Test. An infiltration test may be substituted for an exfiltration test if the ground

water table is above the highest joint in the structure. If there is no leakage into the structure as determined by the Engineer, it will be considered to have passed. If deflected area of pipe filled with water does not drain and remains submerged, that section of pipe will need to be replaced. If the Engineer is not satisfied, additional testing shall be performed.

- F. 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 only if such tests, inspections, 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:

- C. 29 CFR 1904, OSHA, Record Keeping.
  - 1. 29 CFR 1910, OSHA, General Industry Standards.
  - 2. 29 CFR 1926, OSHA, Construction Industry Standards.
  - 3. 29 CFR 1926.65, OSHA, Hazardous Waste Operations and Emergency Response.
  - 4. 49 CFR 171.8, DOT, Hazardous Materials in Transport.
  - 5. 40 CFR Parts 261.3, 264 and 265, EPA, Resource Conservation and Recovery Act.
  - 6. 29 CFR 1910.146, OSHA, Permit-Required Confined Spaces.
  - 7. 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

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## SECTION 01500

### CONSTRUCTION CONSIDERATIONS

#### PART 1 - GENERAL

##### 1.01 WORK WITHIN COMMERCIAL AND INDUSTRIAL AREA

- A. The CONTRACTOR shall work with adjacent commercial and industrial businesses to maintain access at all times in / out of the property using the rights-of-way, including provisions for delivery trucks at any time of day. Coordination with businesses for the removal / relocation of vehicles and equipment parked or staged in the right-of-way is included.

##### 1.02 HYDRAULIC UPLIFT ON STRUCTURES

- A. The CONTRACTOR shall be completely responsible for any 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.

##### 1.03 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, wetwells, 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.
  - 3. 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.

#### 1.04 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.

#### 1.05 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.
- 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 excavated 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 stockpiled on the site, in a location as designated by the CITY. 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.

#### 1.06 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.

#### 1.07 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 grout to fill any voids and cover the exposed aggregate and shall be trowel-finished to provide a plumb and square opening.
- C. 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.
- D. 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.

- E. 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 Division 9.
- F. 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.

#### 1.08 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 manufacturer's specifications, drawings and tolerances; under the direct supervision of the required manufacturer's 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.

#### 1.09 SUPERVISION BY MANUFACTURER'S REPRESENTATIVES

- A. The CONTRACTOR shall provide the services of qualified equipment manufacturer's 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.

#### 1.10 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 manufacturer's recommendations.

#### 1.11 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.

#### 1.12 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 or not 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.

#### 1.13 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.

#### 1.14 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. Subsurface data are offered in good faith solely for placing the CONTRACTOR in receipt of all information available to the CITY and ENGINEER and in no event is to be considered as part of the Contract Documents. The CONTRACTOR shall interpret such sub-surface data according to his own judgment and not rely upon the same as accurately describing the sub-surface conditions, which may be found to exist.

- C. 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.
- D. In making these data available, the CITY makes no guarantee, either expressed or implied, as to their accuracy or to the accuracy of any interpretation thereof.

#### 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's 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. The location and extent of underground and covered facilities are not guaranteed and the Contractor is cautioned to proceed with care in order to prevent the undermining or damage to existing structures, piping, or facilities.
- B. 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.
- C. When CITY water is being used, the supply source shall be protected against contamination in accordance with existing codes and regulations.
- D. 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, 3200 East Oakland Park Boulevard, Room 204, Bridge Building, Fort Lauderdale, Florida 33300.
- B. The Contractor shall provide all barricades and flashing warning lights or other devices necessary to warn pedestrians and area traffic.
- C. Personnel working in contact with sewage flow or surfaces carrying wastewaters or sludges shall be immunized as recommended by the Broward County Health Department.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01510

### TEMPORARY UTILITY SERVICES AND STAGING AREA

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. The CONTRACTOR shall provide for temporary utilities and services for his own operations. These shall include electrical power, water, ventilation, sanitary facilities. The CONTRACTOR shall furnish, install and maintain all temporary utilities during the contract period including removal upon completion of the work. Such facilities shall comply with regulations and requirements of the National Electrical Code, OSHA, Florida Power and Light, and applicable Federal, State and local codes, etc. In addition, the CONTRACTOR shall provide the following:

##### 1.02 TEMPORARY POWER (NOT USED)

##### 1.03 TEMPORARY WATER

- A. The CONTRACTOR shall supply all water used for construction, flushing, testing, and temporary sanitary facilities. The CONTRACTOR shall provide and maintain all piping, fittings, adapters, and valving required. It is the CONTRACTOR'S responsibility to arrange through the City Underground Utilities Division for a 2-inch fire hydrant 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.

##### 1.04 TEMPORARY VENTILATION (NOT USED)

##### 1.05 TEMPORARY SANITARY FACILITIES

- A. The CONTRACTOR shall provide and maintain adequate and clean sanitary facilities for the construction work force and visitors. The facilities shall comply with local codes and regulations and be situated at approved locations.

##### 1.06 TEMPORARY TELEPHONE SERVICE (NOT USED)

##### 1.07 SECURITY (NOT USED)

##### 1.08 STAGING AREA

- A. The CONTRACTOR shall arrange, coordinate and take all necessary steps regarding his work effort to comply with constraints defined in Section 01520, including off site parking, staging, storage, etc., as required. Costs associated with these efforts shall be included in the bid for this project.

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. The phasing plan must be reviewed and approved by the City and the Engineer.**

##### 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. Advanced notice and coordination with the City are required for all tie-ins/connections and for any necessary system isolation(s). 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 workdays 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" (refer to Appendix) 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 by the Contractor with soft digging, GPR, or other methods as necessary.
- 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 to City Underground staff.
- 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 Sewer 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. Property and business owners 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 a timely fashion.
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 \$2000/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

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## 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 so 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 at the Contractor's cost.



- 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

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## 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 of 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

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## 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 plant 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 and in advance of the work effort such that approvals may be obtained, and 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 be kept open to traffic at all times 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 be kept accessible to fire-fighting equipment at all times. 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 work day, at least three (3) working days prior to the closure. The Contractor shall minimize the inconvenience and minimize the time period 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

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## 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. No storage area will be provided by City. The Contractor shall enforce the instructions of the City and the Engineer regarding the posting of regulatory signs for loadings on structures, fire safety, and smoking areas.

##### 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.)
- B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.
- C. Should the Engineer determine that the Work is not substantially complete:
1. The Engineer will promptly notify the Contractor in writing, giving the reasons 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.
- D. 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

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## SECTION 01710

### AS BUILT DATA SPECS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. City of Hollywood – Department of Public Utilities – GIS: As-Built CAD Standards

This serves as City of Hollywood Department of Public Utilities - Computer Aided Design and Drafting (CADD) data standard for any Public Utilities related projects.

1. Engineering firms have their own standards for creating CAD drawings. These standards are inconsistent between the firms. A lot of time is spent due to the persisting inconsistencies and complexity when transferring the drawings from “Native digitizing Software” to that of “Final deliverable format”.
2. This document is developed to provide Computer Aided Drafting (CAD) standards and guidelines for use by Contractors, Engineers, and Contractors who are involved in digitizing of Potable, Sanitary, Drainage, Raw, Reclaimed, and Brine water features with reference to hard copy As-Built drawings for the City of Hollywood - Department of Public Utilities.
3. As of October 1, 2016, all As-Built plans submitted to the City of Hollywood - Department of Public Utilities must be provided in electronic computer aided design (CAD) format. The following standards must be followed for all plans. Construction Drawings will not be approved until these standards are met. OR Applications for payment will not be approved without updated redline As-Built accepted by the project manager. Final Payment will not be approved without acceptance of the As-Built in the CAD format prescribed in this document.

###### B. As-Built Drawing Procedures

During the construction of the project, the Contractor shall be responsible for maintaining a set of As-Built drawings. The basis of the As-Built drawings shall be the Construction Drawings as reviewed and approved by the Project Manager - City of Hollywood - Department of Public Utilities.

1. The Contractor shall maintain one set of As-Built drawings at the Project Site. On these, all project conditions, locations, configurations, and any other changes or deviations that may vary from the information represented on the original Construction Design Drawings shall be noted; including buried or concealed construction and utility features that 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 Construction Design Drawings. Drawings shall

also note the location of any other buried infrastructure such as landscape irrigation, onsite drainage, etc., as well as any surface building obstacles such as ponds, fences, walls, rocks, etc. As-Built drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the facilities as actually constructed.

2. The master As-Built drawings shall be maintained up-to-date during the progress of the Project. Red ink shall be used for alterations and notes. Notes shall identify relevant changes by number and date.
3. As-Built drawings shall be accessible to the Department of Public Utilities personnel at all times during the construction period.
4. The As-Built drawings shall be submitted to the Department of Public Utilities upon completion of the project.
  - a. The Department of Public Utilities staff will review for completeness, accuracy, and format of submitted As-Built drawings. If the As-Built drawings are considered unacceptable, they will be returned to the Contractor for correction and resubmitted.

C. Drafting Software

1. AutoCAD MAP/AutoCAD Civil 3D and higher version software should be used for drafting/attributing the potable, sanitary, drainage, raw, reclaimed, and brine water features. The main reason is that they support object data required for Department of Public Utilities - GIS project. All drawings shall be DWG format.

D. Drawing File Naming Convention, Setup and Structure

1. All drafting shall be done at 1:1 (1 AutoCAD unit = 1 foot), in engineering units, in the AutoCAD model space environment
2. It is important to create the drawings using a standard schema that will allow smoother transition to the GIS platform. Drawings must be created in NAD 1983 HARN State Plane Florida East FIPS 0901 Feet coordinate system.

E. Layerization

1. Table 1: Feature Class Names and Geometry Types illustrates the Layer name naming convention that should be used for each asset. It also identifies how Blocks should be named when applicable.
2. All layers must conform to the proper geometry type (Line, Arc, LWPolyline, PolyLine, 3DPolyline, MPolygon, Insert, Point/Block) as indicated in Table 1.

3. All layers must contain only the features that are described for that layer. For example, the Manhole Drainage layer must only contain the Storm Water manhole points and not such features as control valve, clean out, or water fittings.
4. All layers must be clearly differentiated from each other.
5. All layers must be differentiated among Abandoned, New, and Existing utility related features. For example, 20-WATER LINE-ABANDONED, 20-WATER LINE-NEW, 20-WATER LINE-EXISTING.
6. All layers must be differentiated according to the size of the pipe. For example, 20-WATER LINE.
7. Point / Block features should not be exploded. If exploded, they will need to be joined again prior to submitting the deliverable(s).
8. All annotations should be in model space properly created when a layer requires it. The layer name must match the layer name for the particular feature.

**Table 1**

**Feature Class Names and Geometry Types**

<b>FEATURE CLASS NAMES AND GEOMETRY TYPES</b>			
<b>Asset</b>	<b>Entity</b>	<b>Layer</b>	<b>RefName</b>
Anchor Guy Wire	Insert, Point, Block	XUTILS	046C
Asphalt Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	AP	
Back Flow Preventor	Insert, Point, Block	WATERLINE	BFP
Back of Sidewalk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	SWKB	
Bollard	Insert, Point, Block	XMISC	042C
Brine Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	BRINE WATER	
Brine Water Valve	Insert, Point, Block	BRINE WATER	025C
Buried Electric	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ELECTRIC	
Buried Fiber Optic FPL	Line, Arc, LWPolyline, PolyLine, 3DPolyline	FPLFO	
Buried Telephone	Line, Arc, LWPolyline, PolyLine, 3DPolyline	BELLSOUTH	
Cable TV	Insert, Point, Block	CABLE TV	CATV
Catch Basin	Insert, Point, Block	CB	
Cleanout	Insert, Point, Block	CLNO	
Concrete Light Pole	Insert, Point, Block	XUTILS	055C
Concrete Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CPVT	

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Asset	Entity	Layer	RefName
Concrete Power Pole	Insert, Point, Block	XUTILS	051C
Concrete Sidewalk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CONC SWLK	
Curb Inlet	Insert, Point, Block	CI	039C
Easement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ESMT	
Edge of Asphalt	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ASPH EDGE	
Edge of Asphalt Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	ASPH EOP	
Edge of Concrete	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CONC EDGE	
Edge of Concrete Curb	Line, Arc, LWPolyline, PolyLine, 3DPolyline	CONC CURB	
Edge of Curb	Line, Arc, LWPolyline, PolyLine, 3DPolyline	EOCURB	
Edge of Pavement	Line, Arc, LWPolyline, PolyLine, 3DPolyline	EOP	
Electric Box	Insert, Point, Block	ELECTRIC BOX	EB
Fire Hydrant	Insert, Point, Block	FIRE HYDT	033C
Flag Pole	Insert, Point, Block	XMISC	FP
Force Main Sanitary Sewer Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	FM SANITARY SEWER	
Force Main Storm Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	FM STORM DRAINAGE	
Front of Sidewalk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	SWKF	
Gas Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	GAS LINE	
Gas Meter	Insert, Point, Block	GAS	027C
Gas Riser	Insert, Point, Block	GAS	GAS
Gas Valve	Insert, Point, Block	GAS	025C
Gravity Sanitary Sewer Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	G SANITARY SEWER	
Gravity Storm Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	G STORM DRAINAGE	
Handhole	Insert, Point, Block	XUTILS	HH
Irrigation Control Valve	Insert, Point, Block	XUTILS	IRRCV
Irrigation Meter	Insert, Point, Block	XUTILS	IRRM
Mail Box	Insert, Point, Block	XMISC	MBX
Manhole Drainage	Insert, Point, Block	MHD	041C-DRAINAGE
Manhole Electric	Insert, Point, Block	MHE	ELECMH
Manhole FPL	Insert, Point, Block	MHFPL	041C



FEATURE CLASS NAMES AND GEOMETRY TYPES			
Asset	Entity	Layer	RefName
Manhole Sanitary	Insert, Point, Block	MHS	041C-SANITARY
Manhole Telephone	Insert, Point, Block	MHT	BSMH
Mast Arm	Insert, Point, Block	XUTILS	059C
Metal Light Pole	Insert, Point, Block	XUTILS	MLP
Metal Pipe Iron Rod	Insert, Point, Block	PIP	004C
Monitoring Well	Insert, Point, Block	XUTILS	MW
Paver Walk	Line, Arc, LWPolyline, PolyLine, 3DPolyline	PAVER WALK	
Railroad Crossing Gates	Insert, Point, Block	XUTILS	079C
Raw Water	Insert, Point, Block	RWATR STRC	RW
Raw Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	RWATR	
Reclaimed Water Valve	Insert, Point, Block	RCWATR	025C
Reclaimed Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	RCWATR	
Sanitary Sewer Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	SANITARY SEWER	
Sanitary Sewer Valve	Insert, Point, Block	SANITARY SEWER	025C
Sign	Insert, Point, Block	XMISC	001T
Signal Pole	Insert, Point, Block	XUTILS	057C
Sprinkler	Insert, Point, Block	XUTILS	SPKR
Storm Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	STORM DRAINAGE	
Storm Water Valve	Insert, Point, Block	STORM DRAINAGE	025C
Street Light Pole	Insert, Point, Block	XUTILS	053C
Traffic Signal Box	Insert, Point, Block	XUTILS	073C
Valve	Insert, Point, Block	XUTILS	025C
Water Line	Line, Arc, LWPolyline, PolyLine, 3DPolyline	WATER LINE	
Water Meter	Insert, Point, Block	WATERLINE	027C
Water Valve	Insert, Point, Block	WATERLINE	025C
Wood Light Pole	Insert, Point, Block	XUTILS	WLP
Wood Power Pole	Insert, Point, Block	XUTILS	WPP

#### Notes

- It is not mandatory for all Layers listed above to exist in a drawing. Layers / Tables should be created / populated only when a feature occurs in a particular drawing.
- The Drawing can contain other layers for plan, profile, streets, text, information pertinent to engineering, etc.
- Any feature not included in the above list should be informed to the City of Hollywood - Department of Public Utilities and shared in table format (CSV, TXT, or Excel). This will allow us to refine our list of possible survey features for data processing and GIS integration purposes.

- Table 2: Enterprise GIS Database Model - Feature Class Names and Geometry Types in the Appendix section illustrates all utility related features supported in the City of Hollywood - Department of Public Utilities GIS Enterprise database model.
- The information presented here is subject to change in order to support the Department of Public Utilities' mission. Any updates will be shared with Contractors, Engineers, and Contractors

## F. PolyLines

### 1. Break Mains at:

#### a. All Pressurized Mains intersections

##### i. Fittings

- 1) Cross
- 2) Reducer
- 3) Tee

##### ii. System valves

- 1) Ball, butterfly, gate, plug valves
- 2) pressure reducer valves
- 3) pressure (zone) separation valves
- 4) reservoir valves
- 5) system separation (normally closed)
- 6) altitude valves

##### iii. Pump stations

##### iv. Treatment plant

##### v. Reservoir

### 2. Do NOT break Mains at:

#### a. Fittings

##### i. Bend

##### ii. Tap

##### iii. Wye

##### iv. Clamp

#### b. Laterals or lateral services

#### c. Check valves

- d. Connection points
- G. Polygons
  - 1. All Polygon type features must be completely closed.
  - 2. All edges on polygon features must be snapped together at the vertices. Gaps in polygon boundaries will not be accepted.
- H. Deliverables
  - 1. The Contractor shall submit three hardcopies of the As-Built drawings.
  - 2. The Contractor shall also submit electronic CAD files containing the information depicted on the As-Built drawings.
  - 3. Files shall be submitted on portable media such as CD-ROM, or DVD in AutoCAD format. Files may be compressed in a format that is compatible with the WinZip decompression software. Email is also acceptable but the City of Hollywood may request the file(s) in digital format at any moment.
- I. Datum Policy
  - 1. Datum policy is for electronic submittals only. As-Built drawings shall be referenced to at least three points on the drawing that have noted horizontal and vertical datum information. These three points may be existing control, new control, or parcel corners. As long as the drawing has a 1:1 relationship with these three points, the remainder of the drawing can be in a project coordinate system. The Department of Public Utilities will use these three points for location and rotation of the project coordinates at a later date.
- J. Horizontal Datum
  - 1. The coordinate system for all As-Built drawings shall be Florida East State Plane Coordinates, NAD 1983 HARN in US Survey feet. (NAD 1983 HARN State Plane Florida East FIPS 0901 Feet)
- K. Vertical Datum
  - 1. All elevations shall be referenced to the NAVD 88 datum with elevations given in US Survey feet. Any elevation using NGVD 29 vertical datum must be converted to NAVD 88.
- L. Accuracy
  - 1. Control discovery information is to be survey accurate.
  - 2. The Department of Public Utilities is looking for accurate enough information to:

- a. Geolocate buried facilities, and
- b. Incorporate the As-Built information into the Department of Public Utilities' geographic information system.

M. Metadata Policy

- 1. All new land survey information (parcel meets & bounds, control, topographic information) within the submitted As-Built shall be accompanied with metadata, describing the following:
  - a. Surveyor Name
  - b. Survey Company
  - c. Date Surveyed
  - d. Control Reference Used (Control ID, Type, Coordinate Datum)
  - e. Control Type (PK nail, Brass Marker, etc.)

N. Other Information

- 1. All files associated with the post-processing of GPS data including raw and post-processed GPS data shall be included in the submitted deliverable to the City of Hollywood - Department of Public Utilities. These files can include but not be limited to: .ssf GPS data, import files, export files, and correction files.
- 2. Elevation files must be delivered as well in text file format. At a minimum, these files must include unique ID, X-Coordinate, Y-Coordinate, Elevation, collected feature code, and collected feature description.

## Appendix

**Table 2: Enterprise GIS Database Model - Feature Class Names and Geometry Types**

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Sewer Features			
sCleanOut	Sewer	Point/Block	Clean Out, Flushing Structure
sControlValve	Sewer	Point/Block	Air Release
sDischargePoint	Sewer	Point/Block	Discharge Point
sElevationPt	Sewer	Point/Block	Elevation Points
sFitting	Sewer	Point/Block	Tee, Bends, Pipe Change, Reducer, Wye, Dead End, Transition, Reducing Tee, Plug, Cross, Coupling, Cap, 90 Bend, 45 Bend, 22 1/2 Bend, 11 1/4 Bend
sLiftStation	Sewer	Point/Block	Lift Station
sLUMConnection	Sewer	Point/Block	LUM Connection
sManhole	Sewer	Point/Block	Standard, Drop, Monitoring, Diversion, Dog House, Metering
sNetworkStructure	Sewer	Point/Block	Grease Trap, Metering Facility, Sampling Station, Septic Tank, Wet Well, Dry Well
sPump	Sewer	Point/Block	Booster, Chopper, Grinder, Non-Clog, Submersible
sServiceConnection	Sewer	Point/Block	Service Connection
sSystemValve	Sewer	Point/Block	Gate, Plug
sTestStation	Sewer	Point/Block	test Station
sValveOperator	Sewer	Point/Block	Valve Operator
sVault	Sewer	Point/Block	Vault
sGravityMain	Sewer	PolyLine	Collector, Inverted Siphon, Trunk
sLateralLine	Sewer	PolyLine	Lateral
sPressurizedMain	Sewer	PolyLine	Vitrified Main, Pre-Stressed Concrete Cylinder, Polyvinyl Chloride, Polyethylene, High Density Polyethylene, Ductile Iron, Cured in Place, Cast Iron, Asbestos Cement
sCasing	Sewer	MPolygon	Pipe Casing (Steel Casing, Concrete Encasement, High Density Polyethylene, Polyvinyl Chloride, Reinforced Concrete)

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Water Features			
wControlValve	Water	Point/Block	Air Release, Altitude, Anti-Back Flow, Back Flow Control, Blow Off, Detector Check, Double Check, Pressure Relief, Pressure Vacuum, Reduce Pressure Zone, Simple Check, Surge Relief
wCurbStopValve	Water	Point/Block	Curb Stop Valve
wElevationPt	Water	Point/Block	Elevation Points
wFitting	Water	Point/Block	11 1/4 Bend, 22 1/2 Bend, 45 Bend, 90 Bend, Bend, Cap, Coupling, Cross, Other, Plug, Reducer, Reducing Tee, Sleeve, Tap, Tee, Transition, Wye
wHydrant	Water	Point/Block	Fire Hydrant
wLUMConnection	Water	Point/Block	LUM Connection
wManhole	Water	Point/Block	Manhole
wNetworkStructure	Water	Point/Block	Access Manhole, Pneumatic Tank, Treatment Plant
wPump	Water	Point/Block	Pump
wSamplingStation	Water	Point/Block	Sampling Point / Station
wServiceConnection	Water	Point/Block	Service Connection, Water Meter
wSiameseConnection	Water	Point/Block	Siamese Connection
wStorageTank	Water	Point/Block	Storage Tank
wSystemValve	Water	Point/Block	Gate, Butterfly, Tapping, Hydrant, Zone, Meter, Air Release, Blow Off, Main Line, Plug, Gate
wTestStation	Water	Point/Block	Test Station
wAbandonedLine	Water	PolyLine	Abandoned Lines
wCasing	Water	PolyLine	Pipe Casing (Steel Casing, Concrete Encasement, Ductile Iron)
wConstructionLine	Water	PolyLine	Construction Line
wLateralLine	Water	PolyLine	Residential, Fire, Commercial, Irrigation, Sampling
wMainLine	Water	PolyLine	Distribution, Transmission
wPressureZone	Water	MPolygon	Pressure Zone

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Storm Water Features			
swCleanOut	Storm Water	Point/Block	Clean Out, Flushing Structure
swControlValve	Storm Water	Point/Block	Flap Gate
swDischargePoint	Storm Water	Point/Block	Discharge Point
swElevationPt	Storm Water	Point/Block	Elevation Points
swFitting	Storm Water	Point/Block	Tee, reducer Plug, Cross, Cap, 90 Bend, 45 Bend, 22 1/2 Bend
swInlet	Storm Water	Point/Block	Inlet
swManhole	Storm Water	Point/Block	Conflict, Pollution Control, Sedimentation, Split, Standard
swNetworkStructure	Storm Water	Point/Block	Diversion Chamber, Diversion Point, Junction Chamber, Pump Station, Split Manhole, Storage Basin, Tide Chamber, Lift Station, Discharge Structure, Virtual Junction
swPump	Storm Water	Point/Block	Pump
swPumpStation	Storm Water	Point/Block	Pump Station
swSystemValve	Storm Water	Point/Block	Ball, Butterfly, Cone, Gate, Plug, Round way
swTestStation	Storm Water	Point/Block	Test Station
swWeirStructure	Storm Water	Point/Block	Broad-Crested, Combination, Labyrinth, Minimum Energy Loss, Sharp-Crested, V-Notch
swWell	Storm Water	Point/Block	Well
swCasing	Storm Water	PolyLine	Access Tunnel, Casement, Conduit Bridge, Protective Tunnel
swCulvert	Storm Water	PolyLine	Culvert
swDrainfield	Storm Water	PolyLine	DF, INF
swGravityMain	Storm Water	PolyLine	Gravity Main
swOpenDrain	Storm Water	PolyLine	Open Drain
swPressurePipe	Storm Water	PolyLine	Pressure Pipe
swVirtualDrainline	Storm Water	PolyLine	Virtual Drain line
swDetention	Storm Water	MPolygon	Detention

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Brine Disposal			
bdControlValve	Brine Disposal	Point/Block	Casement
bdElevationPt	Brine Disposal	Point/Block	Elevation Points
bdFitting	Brine Disposal	Point/Block	Wye, Transition, Tee, reducer Plug, Cap, 90 Bend, 45 Bend, 22 1/2 Bend
bdManhole	Brine Disposal	Point/Block	Manhole
bdNetworkStructure	Brine Disposal	Point/Block	Network Structure
bdPump	Brine Disposal	Point/Block	Pump
bdSystemValve	Brine Disposal	Point/Block	Gate, Butterfly
bdCasing	Brine Disposal	PolyLine	Casement
bdPressurizedMain	Brine Disposal	PolyLine	Transite, Polyvinyl Chloride, Polyethylene, High Density Polyethylene, Chlorinated Polyvinyl Chloride
Raw Water			
rwAbandonedPoint	Raw Water	Point/Block	Abandoned Point
rwControlValve	Raw Water	Point/Block	Air Release, Altitude, Atmospheric Vacuum, Blow Off, Simple Check
rwElevationPt	Raw Water	Point/Block	Elevation Points
rwFitting	Raw Water	Point/Block	Wye, Transition, Tap, Sleeve, Reducer, Plug, Cross, Coupling, Cap, 90 Bend, 45 Bend, 22 1/2 Bend, 11 1/4 Bend
rwNetworkStructure	Raw Water	Point/Block	Meter Station
rwPump	Raw Water	Point/Block	Pump
rwSamplingStation	Raw Water	Point/Block	Sampling Station
rwSystemValve	Raw Water	Point/Block	Butterfly, Gate, tapping
rwTestStation	Raw Water	Point/Block	Test Station
rwAbandonedLine	Raw Water	PolyLine	Abandoned Line
rwCasing	Raw Water	PolyLine	Casing
rwConstructionLine	Raw Water	PolyLine	Construction Line
rwMain	Raw Water	PolyLine	CIP, DIP, HDPE, PVC, RCP, SP, SSP



FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Reclaimed Water			
rcControlValve	Reclaimed Water	Point/Block	Air Release, Back Flow Control, Double Check, Simple Check
rcDischargePoint	Reclaimed Water	Point/Block	Meter
rcElevationPt	Reclaimed Water	Point/Block	Elevation Points
rcFitting	Reclaimed Water	Point/Block	Tee, Reducer, Plug, Coupling, Cap, 90 Bend, 45 Bend, 22 1/2 Bend, 11 1/4 Bend
rcManhole	Reclaimed Water	Point/Block	Manhole
rcNetworkStructure	Reclaimed Water	Point/Block	Flow Meter, Monitoring Well, Pump Station, Storage Basin, Treatment Plant
rcPump	Reclaimed Water	Point/Block	Pump
rcSystemValve	Reclaimed Water	Point/Block	Ball, Butterfly, Gate, Tapping
rcTestStation	Reclaimed Water	Point/Block	Test Station
rcCasing	Reclaimed Water	PolyLine	Casement
rcPressurizedMain	Reclaimed Water	PolyLine	CIP, DIP, HDPE, PVC
rcDetention	Reclaimed Water	MPolygon	Detention

FEATURE CLASS NAMES AND GEOMETRY TYPES			
Feature Class Name	Dataset Name	Type	Example: Layer Contents
Annotation Features			
sPipe_Annos	Sewer	Text	Text associated with sewer mainlines such as Diameter, Material, Offset, Slope, As-Built # etc.
sPoint_Annos	Sewer	Text	Text associated with sewer point features such as Manholes, Lift Stations etc.
wPipe_Annos	Water	Text	Text associated with water mainlines such as Diameter, Material, Offset, As-Built # etc.
wPoint_Annos	Water	Text	Text associated with water point features such as Hydrants, Valves, etc.
swPipe_Annos	Storm Water	Text	Text associated with storm water mainlines such as Diameter, Material, Offset, Slope, As-Built # etc.
swPoint_Annos	Storm Water	Text	Text associated with storm water point features such as clean outs, valves, fittings, inlets, manholes, etc.
Miscellaneous_Annos	W/S	Text	Miscellaneous annotations such as Schools, Parks, etc.
Address_Annos	W/S	Text	Street postal address number
StreetNames	W/S	Text	Street Names

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 insure 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

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.

- A. **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.
- B. **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).

- C. **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.
- D. **Surveyor:** Contractor's Surveyor that is licensed by the State of Florida as a professional surveyor and mapper pursuant to Chapter 472, F.S.
- E. **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
Bench Marks	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 call-outs 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. Actually 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	535893.3040	1491144.0450	96.31	91.56	88.61			88.71		88.61		Water Reclamation
3	277	277	505962.0207	1474306.7832	92.76		86.03				86.05			Water Reclamation
4	278	278	506130.5461	1475093.6566	91.00					85.95		86.17	87.2	Water Reclamation
5	279	279	505993.3990	1475243.3448	92.36					88.8				Water Reclamation

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements / Lookup / Relations

## 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	<b>ID Number</b>	<b>Utilities Asset Number</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Fitting Type</b>	<b>Service Type</b>
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 / Fitting / 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 / **Cleanout** / 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	538065.74	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 / **Pipes** / 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 / **Structures** / Easements

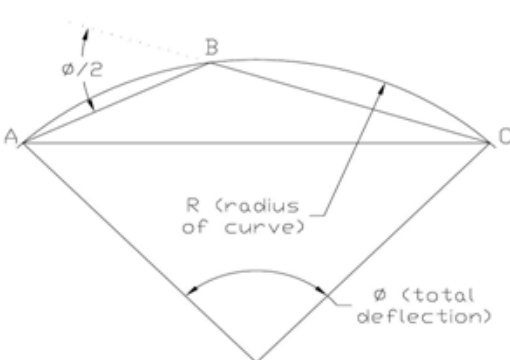
### Easements Worksheet

	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 / **Easements**

**Note: Do not fill out Utilities Asset Number (grey) column.**

**TABLE 01720-3**  
**PIPE DEFLECTION TABLE EXAMPLE**

<b>Project</b>					<div><div></div><div>FM</div><div>National Pipe</div><div>16" PVCC905</div><div>6 inches</div><div>4.5 inches</div><div>1.5 degrees</div><div>764 feet</div><div>20 feet</div></div>							
<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> 75%												
<b>Allowable Angle of Offset</b>												
<b>Allowable Radius of Curvature</b>												
<b>Laying Length of Pipe</b>												

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 ft	Length BC ft	Length AC ft	XYZ (w/ elevation) degrees	XYZ (w/ elevation) ft	per laying length degrees	per laying length 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								

Data that has be inputted
 Values in yelloware over spec

\*Uses lawof cosines to determine angle ABC and Ø.  
 $\text{angle } ABC = \arccos((AB^2 + BC^2 - AC^2) / (2 * AB * BC))$   
 $180 - \text{angle } ABC = \text{angle } \phi$   
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 lawof sines, using the chord length AC and radius R.  
Since  $\sin((\phi/2) * (PI/180)) = (\text{Chord}/2) / R$  and length AC=Chord  
 $R = AC / (2 * \sin(\phi * PI / 360))$   
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 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.

### 3.02 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.

### 3.03 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.

### 3.04 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

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## 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, FDOT, County, 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 are in 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):

Agency	Permit No.
Department of Health (water)	0126758-335-DS
Broward County EPGMD (wastewater)	WW-62820
Broward County Traffic Engineering Division (pavement restoration: markings and signage)	200810062 (approval forthcoming)
City of Hollywood Building Department	P20-101560

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.

- D. 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.

- E. 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
- F. 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

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## DIVISION 2

## SITE WORK



## 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 City 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.
- 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 and cast-iron piping, valves, fittings, restraints, and other appurtenances shall be manufactured in the United States.
- E. All nuts, bolts, washers, and restraining rods for water valves shall be A-316 stainless steel.

### 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.
- 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, 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 cast 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.

## 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

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

See Section 03600, Grouting.

## 2.05 FIRE HYDRANTS

See Fire Hydrants, of Section 15001, Water Services and Miscellaneous Fittings.

## 2.06 METER BOXES, SECTIONAL PLATES AND VAULTS

See Meter Boxes and Vaults for Water Service, of Section 15001, Water Services and Miscellaneous Fittings.

## 2.07 METER VALVES

See Section 15001, Water Services and Miscellaneous Fittings.

## 2.08 PIPE AND FITTINGS - CAST DUCTILE IRON

See Section 15060, Piping and Fittings.

## 2.09 PIPE AND FITTINGS - GALVANIZED STEEL

See Section 15060, Piping and Fittings.

## 2.10 PIPE AND FITTINGS - POLY (VINYL CHLORIDE) (PVC)

See Section 15060, Piping and Fittings.

## 2.11 STEEL CASING PIPE

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

See Section 15102, Tapping Sleeves and Tapping Valves.

#### 2.15 VALVES

See Division 15 for the applicable valve section(s).

#### 2.16 BACKFILL AND EMBEDMENT MATERIAL

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

### 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 (maximum 1,000 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 1,000 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 1,200 feet shall separate any two open trench sections as defined hereinbefore.

### 3.02 EXCAVATION

See Section 02222, Excavation and Backfill for Utilities and Structures.

### 3.03 WATER SERVICE INSTALLATIONS

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 be kept clean at all times 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 particular joint used shall be approved by the Engineer prior to installation.
- I. Unless otherwise directed, cast 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.
- 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 insure 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 corporation stops shall be AWWA tapered thread only, and the Contractor shall provide suitable equipment for this purpose 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 cast/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 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

See Section 15995, Pipeline Testing and Disinfection.

### 3.06 PAINTING

As per the Contract documents.

### 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 City 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

The following conditions must be met prior to acceptance of the Project by the City:

- A. 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.
- B. 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 Broward County Health Department and the City prior to activation.
- C. All meter boxes and fire hydrants shall be installed within concrete slabs to the dimensions shown in the Standard Details.
- D. Acceptance by any other governing agency, if any.
- E. Final field inspection and completion of punch list items, if any, to the City's satisfaction.
- F. Final cleanup of work site in accordance with Section 01700, Project Closeout.
- G. 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.
- H. 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: Furnish 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. 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. 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.
- B. 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.
- C. 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.

D. 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. Shop Drawings - Submitted to the Engineers acceptance prior to construction in accordance with Section 01300 for the following:

1. Grout – See Section 03600 requirements.
2. Caps and plugs.

PART 2 - MATERIALS (NOT USED)

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. Types of pipe to be abandoned in place or placed out of service:
  - a. Asbestos Cement (AC) Water Main and various other pipes as shown on the drawings. See Section 01030 Special Project Procedures for asbestos cement (AC) pipe handling.
2. 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.
3. 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.

END OF SECTION

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## 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 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:

1. Install, maintain, monitor and take readings from the observation wells and geotechnical instruments in accordance with the dewatering plan.
2. 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.
3. 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, railroads 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 Concrete	Age of Concrete, hrs	Peak Particle Velocity in/sec
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, elevated slabs, etc.)	11-24	1.0
	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, railroads, 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. Qualifications of the Contractor's Independent Testing Laboratory as specified in Paragraph 1.06 I, four (4) weeks prior to the execution of any earth excavation, backfilling, filling, or compaction process.
  - 2. 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.
  - 3. Laboratory testing results of gradation and moisture-density relationship. Submittal shall include specific location of the source and the date when sample was taken.
  - 4. 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 Testing and Inspections:
  - 1. By Contractor's independent testing laboratory, acceptable to the Engineer, at Contractor's expense as specified in Paragraph 1.06 G.
  - 2. Location of tests mutually acceptable to testing laboratory and the Engineer or as directed by the Engineer.
  - 3. In the event compacted material does not meet specified in-place density, recompact material and retest this area until specified results are obtained at no additional cost to the Owner.
  - 4. Contractor's testing laboratory to perform inspection at least once daily to confirm lift thickness and compaction effort for entire fill area.
  - 5. Owner may retain the services of an independent testing laboratory to conduct confirmatory testing and inspection.
- 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.
  4. Owner's testing laboratory to conduct confirmatory testing at a minimum frequency of 25% of the specified frequencies in paragraph 1.06.H, or as directed by Owner's Engineer.

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 have 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 811 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 FDOT specifications for Road and Bridge Construction, the drawings and other contract documents.
- B. Material used for backfill 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. Imported sand backfill, when ordered by the Engineer, will be paid for under a separate unit bid item if such bid item has been established, otherwise payment will be made in accordance with a negotiated price.
- 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 FDOT Standard Specifications for Road and Bridge Construction.
- B. Trench and Excavation
  - 1. Work shall comply with the latest FDOT Standard Specifications for Road and Bridge Construction.
  - 2. The maximum amount of open trench permitted in any one location shall be one hundred feet (100'), unless the trench is located within a State or County ROW, in which case the requirement defers 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.
4. Payment for over-excavation shall be paid for either on a negotiated price basis, or as the Engineer may determine in accordance with the General Conditions.

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 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 "Cost Allowance for Permits, Licenses and Fees".
- 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 STRUCTURES

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. This Section includes, except as elsewhere provided, excavation, filling and compacting work for the piping installation.

##### 1.02 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 shall be retained by the CITY to conduct appropriate soils and other testing in accordance with the Contract Documents.

##### 1.03 JOB CONDITIONS

- A. Existing Utilities
  - 1. Locate existing underground utilities in the areas of work. Accurate "As Built" Information describing existing pipelines and underground utilities is not available. Test pits and hand excavation in critical areas will be required prior to initiating work.
  - 2. 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. 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 and the ENGINEER of such piping or utility immediately for directions.
  - 3. The CONTRACTOR shall cooperate with the CITY and utility companies in keeping respective services and facilities in operation.

##### 1.04 PROHIBITION OF BLASTING

- A. The use of explosives for excavation work is strictly prohibited on this project.

## 1.05 SUBMITTALS

- A. The CONTRACTOR shall submit information and samples to the ENGINEER for review as specified herein in accordance with Section 01300. The information shall include:
1. Detailed description of dewatering method chosen and sequence of dewatering operations if dewatering is necessary.
  2. Plans showing the methods and location of dewatering and discharge. The drawings shall include a sufficient number of detailed sections to clearly illustrate the scope of work. The drawings showing all of the above information, including calculations, shall be prepared by a qualified Professional Engineer registered in the state of Florida, and shall bear its seal and signature. If required by regulatory agencies, a copy of the dewatering permit shall be submitted.
  3. Lists of materials and equipment to be used. Detailed description of the method(s) of excavation, fill and compaction to be used.
  4. Plans of open cut excavations showing side slopes and limits of the excavation at grade where not shown on the Contract Drawings. The traffic lane to be closed and maintained shall be indicated in the submittal.
  5. Design computation of sheeting system. Shoring and sheeting plans shall be designed and sealed by a professional Engineer registered in the State of Florida. Submittals shall indicate depth of penetration.
  6. The CONTRACTOR shall furnish the ENGINEER, for approval, a representative sample of structural fill material from off-site sources at least ten calendar days prior to the date of anticipated use of such material. The sample shall be delivered to the site at a location determined by the ENGINEER. The submittal shall identify the source of the material.

## 1.06 PROTECTION OF PROPERTY AND STRUCTURES

- A. The CONTRACTOR shall, at its own expense, sustain in place and protect from direct and indirect injury, its work at all times as well as 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 property in the vicinity of 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 pipes, 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 and lights shall be placed at all excavations in accordance with OSHA requirements.
- C. Safe and suitable ladders for access to trenches shall be provided in accordance with OSHA requirements.

## PART 2 – PRODUCTS

### 2.01 GENERAL

- A. Specific locations/areas of work where these materials shall be utilized are defined on the Drawings.

### 2.02 STRUCTURAL FILL

- A. Fill material shall be noncohesive, nonplastic, 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 AASHO-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.

### 2.03 OTHER MATERIALS

- A. Requirements for any other fill material, if needed, are defined on the Drawings.

## PART 3 - EXECUTION

### 3.01 CONTRACTOR INSPECTIONS

- 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.

### 3.02 EXCAVATION FOR STRUCTURES

- A. Unless otherwise indicated on the Drawings, all excavation 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.

- B. Where required on the Drawings, unsuitable material (silt layer) beneath the groundwater encountered at the site shall be removed using equipment, as approved by the ENGINEER. The equipment shall operate in an organized manner so as to remove silt from one edge of the excavation to the other so as not to trap silt within the undercut area. Unsuitable material shall be drained while being removed, removed and disposed of off-site by the CONTRACTOR. The CONTRACTOR shall clean all roadways impacted by his demucking, hauling, any temporary stockpiling and removal operations at a frequency as determined by the ENGINEER in the field.
- C. In excavating for footings and foundations, the CONTRACTOR shall take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive concrete.

The CONTRACTOR shall ensure that its excavation work does not adversely affect the bearing capacity of the structural subsurface. Also, the CONTRACTOR shall proceed with foundation work immediately after excavation work and as expeditiously as possible so as to minimize any potential for subsurface disturbance due to environmental factors, adverse weather, etc. The CONTRACTOR shall also take all necessary precautions to protect its work from potential adverse impacts. Where excavated areas are disturbed by subsequent operations or adverse weather, scarify surface reshape, fill as required and compact to required density.

- D. All excavated soil material, removed underground utilities including pipes and fittings, electrical conduits and duct banks, and other undefined materials removed within the limits of the excavation, shall be disposed off-site by the CONTRACTOR.
- E. Refer to the Drawings for additional requirements for excavation for specific locations/areas of work.

### 3.03 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 judgement 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.

### 3.04 SHEETING AND BRACING

- A. 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 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.

- B. 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.
- C. Sheeting shall be removed provided its removal will not jeopardize pipes or structures. Any sheeting left in place shall be cut-off two feet below finished grade, or as directed. The CONTRACTOR will not receive extra compensation for sheeting left in place or the cut off work required.

### 3.05 REMOVAL OF WATER

#### A. General

1. The CONTRACTOR shall provide pumps, well points, and other appurtenant equipment necessary to remove and maintain water at such a level as to permit construction in the dry where defined on the Drawings. The ground water level shall be controlled so as to permit the placing and curing of concrete and the maintenance of supporting foundations and adjacent work and structures in the dry.
2. The CONTRACTOR shall use dewatering systems that include automatic starting devices, and standby pumps that will ensure continuous dewatering in the event of an outage of one or more pumps.
3. If excavations to be dewatered cannot be maintained dry by the CONTRACTOR's dewatering efforts, then the CONTRACTOR shall provide tremie seals at no additional cost to the CITY. The placement of tremie seals shall not preclude dewatering operations specified herein. The limits of tremie seals shall be recommended by the CONTRACTOR and reviewed and accepted by the ENGINEER.
4. Dewatering Permits: 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 before commencing the work. The CONTRACTOR will not be granted contract time extensions due to dewatering permit processing delays.
5. 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. Water from the excavation shall be disposed of in such a manner as will not cause injury to public health, to public or private property, to the work completed or in progress, to the surface of the streets, will not cause any interference with the use of the same by the public, or will not cause pollution of any waterway or stream. Water from dewatering operation may be disposed at locations directed by the CITY with the proper installation of siltation screens and operation of the

dewatering system in accordance with all local regulations and codes. The CONTRACTOR shall submit its dewatering method and point(s) of discharge to the ENGINEER for review at least twenty (20) days prior to any dewatering activities. The CONTRACTOR shall provide maintenance of canal(s) and drainage ditches to which it discharges. The cost of maintaining drainage ditches and canal(s) shall be included in the bid price. The CONTRACTOR shall remove siltation and haul, and dispose of this material on a regular basis to maintain the original base conditions at all time, so as not to impact drainage in the general area.

### 3.06 FILL PLACEMENT AND COMPACTION

#### A. General

1. Fill material (including structural fill and other fill material) shall be placed within the limits of excavations as shown on the Drawings. When placed in the wet, fill material shall be placed in standing groundwater to a level one foot above stabilized groundwater. The material shall be placed at one edge of the excavation and pushed to the other so as to move residuals across the bottom of the excavation. The leading edge of the fill should be cleaned regularly to remove it of the advancing residuals. All residuals shall be disposed at off-site locations shown on the Drawings or specified herein.
2. Once fill materials have been placed one foot above the stabilized groundwater, then the entire lift should be rolled with six passes from an 10-ton roller. The coverages shall be overlapping and shall occur while the compactor operated at a travel speed of not more than two feet per second. If a vibratory compactor is used, it should be operated with the vibrator off so as not to induce capillary moisture into the dry fill soils.
3. Fill materials placed following this initial lift shall be placed in the dry with loose lift thickness of eight inches or less. Each lift shall be compacted to achieve a minimum of 98 percent Modified Proctor maximum dry density in accordance with ASTM D1557. Fill materials shall be placed within two percent of optimum moisture content.

B. Inspection and Testing: The fill placement and compaction shall be observed by the ENGINEER. 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.

C. Final Grades: Final structure fill grades shall be within 0.1 feet of elevations shown. Where shown on the Drawings, surfaces shall be sloped for drainage or other surfaces.

D. Refer to the Drawings for additional fill and compaction requirements for specific locations/areas of work.



### 3.07 BACKFILL AGAINST STRUCTURES

- A. Backfill against nonwater holding structures shall not be performed until the concrete has been inspected by the ENGINEER. Backfill against walls shall also be deferred until the structural slab for floors above the top fill line have been placed and attained design strength. Partial backfilling against adequately braced walls may be considered by the ENGINEER on an individual situation basis. Where walls are to be waterproofed, all work shall be completed and membrane materials dried or cured according to the manufacturers instructions before backfilling.

END OF SECTION

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## SECTION 02223

### ABANDONMENT OF PIPELINES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section includes abandonment in place of existing pipelines, when indicated on the drawings for abandonment.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. All related work specified elsewhere, or in other codes or standards, will be as last revised, unless a specific date of issuance is called out in opposition to later revision date(s).

##### 1.03 REFERENCE STANDARDS

- A. ASTM C150 – Standard Specification for Portland Cement
- B. ASTM C494 – Standard specification for Chemical Admixture for concrete
- C. ASTM C618 – Standard Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for use as Mineral Admixture in Portland Cement Concrete.
- D. ASTM C940 – Standard test Method for Expansion and Bleeding of Freshly Mixed grout for Replaces Aggregate Concrete in the Laboratory.
- E. ASTM C1017 – Standard Specification for Chemical Admixture for use in Producing Flowing Concrete.
- F. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink).

##### 1.04 DEFINITIONS

- A. Abandonment: Pipeline abandonment consist of filling or plugging portions of existing pipelines with flowable fill or grout plugs, as indicated on the drawings.
- B. Flowable Fill: Flowable Fill shall be controlled low-strength material consisting of fluid mixture of cement, fly ash, aggregate, water and with admixtures as necessary to provide workable properties. Placement of flowable fill may be by grouting techniques in pipelines or other restricted areas, or as mass placement by chutes or tremie methods in unrestricted locations with open access. Long-term hardened strength shall be within specific range.

- C. Backgrouting: Secondary stage pressure grouting to ensure that voids have been filled within abandoned pipes. Backgrouting will only be required at critical location indicated on the Drawings or if there is evidence of incomplete flowable fill placements.

## 1.05 SUBMITTALS

- A. Submit flowable fill mix design report.
  - 1. Flowable fill type and production method. Describe if fill will be mixed to final proportions and consistency in batch plant or if constituents will be added in transits mixer at placement location.
  - 2. Aggregate gradation of fill. Aggregate gradation of mix shall be used as pilot curve for quality control during production.
  - 3. Fill Mix constituents and proportions including materials by weight and volume, and air content. Give types and amounts of admixtures including air entrainment of air generating compounds.
  - 4. Fill densities and viscosities, including wet density at point of placement.
  - 5. Initial time of set.
  - 6. Bleeding and shrinkage.
  - 7. Compressive strength.
- B. Submit technical information for equipment and operational procedures including projected injection rate, grout pressure, method for controlling grout pressure, bulkhead and vent design and number of stages for grout application.

## PART 2 - MATERIALS

### 2.01 FLOWABLE FILL

- A. Design Mix Criteria: Provide design of one or more mixes to meet design criteria and conditions for placement. Present information required by Part 1, Paragraph E.1 in mix design, to include the following:
  - 1. Cement: ASTM C150 Type I or II. Volume and weight per cubic yard of fill. Provide minimum cement content of 50 pounds per cubic yard.
  - 2. Fly Ash: ASTM C618, Class C or F. Volume and weight per cubic yard of fill. Provide minimum fly ash content of 200 pounds per cubic yard.
  - 3. Potable water: Volume and weight per cubic yard to fill. Amount of water determined by mix design testing.

4. Aggregate gradation: 100 percent passing  $\frac{3}{8}$  inch sieve and not more than 10 percent passing No. 200 sieve. Mix design report shall define pilot gradation based on following sieve sizes:  $\frac{3}{8}$  inch, 4, 8, 16, 30, 50, 100 and 200. Do not deviate from pilot gradation by more than plus or minus 10 percent points for any sieve for production material.
5. Aggregate source material: Screened or crushed aggregate, pit or bank run fine gravels or sand, or crushed concrete. If crushed concrete is used, add at least 30 percent natural aggregate to provide workability.
6. Admixture: Use admixtures meeting ASTM C494 and ASTM C1017 as needed to improve pumpability, to control time of set and to reduce bleeding.
7. Fluidifier: Use fluidifier meeting ASTM C937 as necessary to hold solid constituents in suspension. Add shrinkage compensator if necessary.
8. Performance additive: Use flowable fill performance additive, if needed, to control fill properties.

#### 2.02 FLOWABLE FILL REQUIREMENTS:

- A. Unconfined compressive strength: Minimum 75 psi and maximum 150 psi at 56 days as determined based on an average of three tests for same placement. Present at least three acceptable strength tests for proposed mix design in mix design report.
- B. Placement characteristics: self-leveling.
- C. Shrinkage characteristic: Non-shrink.
- D. Water bleeding for fill to be placed by grouting method in pipes: not to exceed 2 percent according to ASTM C940.
- E. Minimum wet density: 90 pounds per cubic foot.

#### 2.03 GROUT PLUGS

Cement-based dry-pack grout conforming to ASTM C1107, Grades B or C.

### PART 3 - EXECUTION

#### 3.01 REQUIREMENTS BY PIPE LOCATION, SIZE AND DEPTH

- A. Pipe indicated on the drawings to be abandoned in place shall be completely filled with flowable fill.

### 3.02 PREPARATION

- A. Notify inspection at least 24-hours in advance of grouting with flowable fill.
- B. Select fill placement equipment and follow procedures with sufficient safety and care to avoid damage to existing underground utilities and structures. Operate equipment at pressure that will not distort or imperil portions of the work, new or existing.

### 3.03 EQUIPMENT

- A. Mix flowable fill in automated batch plant and deliver it to site in ready-mix trucks. Performance additives may be added at placement site if required by mix design.
- B. Use concrete or grout pumps capable of continuous delivery at planned placement rate.
- C. Installation of Flowable Fill
  - 1. Abandon pipelines, as required in Part 3, Paragraph A, by completely filling with flowable fill. Abandon manholes by filling the portion not removed with flowable fill.
  - 2. Place flowable fill equal to volume of pipe being filled. Continuously place flowable fill from manhole to manhole with no intermediate pour points, but not exceeding 500 linear feet of pipe per fill segment.
  - 3. Perform operation with experience crews with equipment to monitor density of flowable fill and to control pressure.
  - 4. Temporarily plug or cap pipe segments which are to remain in operation during filling to keep lines free of flowable fill.
  - 5. Pump flowable fill through bulkheads or use other suitable construction methods to contain flowable fill in lines to be abandoned.
  - 6. Place flowable fill under pressure flow conditions into properly vented open system until flowable fill emerges from vent pipes. Pump flowable fill with sufficient pressure to overcome friction. Fill sewers from the downstream end to vent at upstream end.
  - 7. Collect and dispose of excess flowable fill material and debris.
- D. Quality Control
  - 1. Provide batch plant ticket for each truck delivery of flowable fill. Note on tickets addition of admixture at site.
  - 2. Check flow characteristics and workability of fill as placement proceeds.

3. Obtain at least three test cylinders from each placement area for determination of 56 day compressive strength bleeding. Acceptance of placement will be based on average strength of three tests.
  4. Record volume of flowable fill placement to demonstrate that voids have been filled. If voids exceed 10 percent of pipeline volume, injection grouting may be required at the direction of the Project Manager.
- E. Protection of Persons and Property
1. Provide safe working conditions for employees throughout demolition and removal operations. Observe safety requirements for work below grade.
  2. Maintain safe access to adjacent property and buildings. Do not obstruct roadways, sidewalks or passageways adjacent to the work.

END OF SECTION

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## SECTION 02225

### CONTAMINATED SOILS AND GROUNDWATER

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. This Section includes, except as elsewhere provided, the work necessary to remove, transport, and properly dispose of contaminated soils and groundwater required for complete construction of structures and underground piping systems and appurtenances as shown on the Drawings and specified herein.
- B. The Contractor is to review the Broward County contaminated sites listing as provided in the Appendix and to obtain the most current listing from the Broward County/FDEP website for reference of locations which may potentially have contaminated groundwater and soils.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02222 – Excavation and Backfill for Utilities and Structures
- B. Section 02140 – Dewatering

##### 1.03 QUALITY CONTROL

- A. Codes and Standards: All work associated with dewatering, excavation, removal, transportation and disposal of contaminated soils and groundwater shall be performed in compliance with applicable codes, standards and requirements of governing authorities having jurisdiction in the area.
- B. Testing and Inspection Service: A testing laboratory certified by the Broward County Environmental Protection and Growth Management Department (BCEPGMD) and the State of Florida shall be retained by the Contractor to conduct appropriate soils and groundwater testing in accordance with regulatory requirements and the Contract Documents.

##### 1.04 SUBMITTALS

- A. The Contractor shall submit information and samples to the City for review as specified herein in accordance with Section 01300. The information shall include:
  - 1. Detailed description of the proposed methods for temporary stockpiling, transportation, and disposal of all contaminated soils and groundwater.
  - 2. Copies of permits for all disposal facilities.

3. Copies of all manifest and documentation for handling and disposing of all contaminated soil and groundwater in full compliance with local, state and federal requirements. This documentation must be provided prior to requesting payment under this Bid item.
4. Copies of all laboratory analyses required for transportation and disposal of all contaminated soils and groundwater in full compliance with local, state and federal requirements.
5. Names, addresses and contact numbers of all subcontractors.
6. Copy of Contractor's Health and Safety Plan and training certificates of personnel who will be handling the contaminated material in accordance with OSHA requirements.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.01 CONTAMINATED SOILS

- A. The Contractor shall retain a laboratory certified by Broward County and the State of Florida to sample the groundwater in the excavation, the stored soil and soil samples in the perimeter of the excavated hole for petroleum contamination (EPA Methods 601, 602, 610). The number of samples shall be sufficient to comply with the requirements of the Contractor's approved Dewatering Plan and all local, state and federal regulations. The results of the tests shall be forwarded to the City.
- B. Excavated materials which are deemed to be contaminated shall be removed, treated and disposed of by the Contractor in accordance with all applicable regulatory requirements. The soil may be contaminated with petroleum product which may be partly or entirely diesel fuel or gasoline. When such soil conditions are encountered, they shall be brought to the City's attention. The extent of excavation shall be determined in the field by the City.
- C. All contaminated soil which is excavated shall be stockpiled in an area designated for contaminated soils. The Contractor shall take whatever precautions are necessary to ensure that contaminated soils are not co-mingled with non-contaminated stockpiled soils and/or mucks.
- D. Contaminated soils must be placed on an impermeable barrier when temporarily stockpiled and must be covered with visquine to prevent runoff. All stockpile leachate or runoff must be collected for disposal in accordance with federal, state and local regulations.

- E. Contaminated soils shall be processed and treated at a state licensed facility. These soils shall be transported and disposed of in accordance with federal, state and local regulations.
- F. The Contractor shall be responsible for testing soil which has been treated to certify treated soil meets applicable federal, state, and local regulations for final disposal.

### 3.02 CONTAMINATED GROUNDWATER

- A. All water generated, pumped or removed from excavations as a result of excavation dewatering activities shall be collected, containerized, and managed prior to discharge and/or treatment at an approved discharge point in accordance with local, state and federal regulations and the requirements of the Contract Documents. If groundwater contamination is identified at any time during the performance of the Work, Contractor shall immediately notify the City.
- B. If contaminated groundwater in the dewatering excavation area is encountered, the contaminated groundwater shall be removed, treated and discharged by the Contractor in accordance with all applicable regulatory requirements.
- C. Treatment of contaminated groundwater will include the following options, depending on the magnitude of the contamination in the trench: Granular Activated Carbon (GAC) Treatment vessels, mobile air stripping units, vacuum truck removal and disposal or other method as approved by the City and regulatory agencies with jurisdiction.
- D. If contaminated groundwater is encountered during construction, Contractor shall provide reference information for the qualified groundwater remediation subcontractor to be utilized, including phone number, contact name, and address. The selected groundwater treatment/recycling facility for hauling contaminated groundwater shall also be identified.
- E. Effluent water from the treatment system will be analyzed by the certified laboratory to confirm that concentrations are below regulatory limits. Effluent water will then be directed to a pre-approved location as determined by local regulatory agencies and/or the City.

### 3.03 TRANSPORT AND DISPOSAL

- A. Transport Regulations: The Contractor shall be responsible for the loading, labeling, placarding, marking, weighing, and transporting of all waste materials in accordance with the Florida Department of Transportation Regulations, and U.S. Department of Transportation Regulations. The Contractor shall use only transporters that are licensed and competent to haul these wastes.

### 3.04 WASTE CONTAINERS

- A. Each transport container of waste shall be visually inspected by the Contractor for leaks, drips, or container damage prior to being loaded. Containers which are found to be leaking or damaged shall not be loaded until the damage is repaired. The Contractor shall

prepare the transport container to prevent spillage or contamination. The Contractor shall notify the City two hours before any loaded transport leaves the site.

- B. All transport containers leaving the site shall be inspected by the Contractor to ensure that no waste material adheres to the wheels or undercarriage.
- C. All vehicles on which waste is adhering shall be cleaned by sweeping tires and undercarriage or by other dry methods prior to leaving the site.

### 3.05 SHIPPING RECORDS

- A. The Contractor shall prepare accurate shipping records for any wastes leaving the site in accordance with applicable federal and state regulations. The Contractor shall be responsible for providing copies of the records to the City and shall immediately notify the City of any problems in completing shipments and disposal of wastes.
- B. The Contractor shall:
  - 1. Be responsible for appropriate measurement of unit quantity (weight or volume) of waste material removed from the site.
  - 2. Coordinate vehicle inspection and recording of quantities leaving the site with the City. These quantities shall be compared to recorded quantities received at the treatment or disposal facilities. The Contractor shall resolve any discrepancies occurring immediately, determining the probable cause for the discrepancy.
  - 3. Be solely responsible for any and all actions necessary to remedy situations involving waste spiked in transit.
- C. The Contractor shall ensure that a copy of the manifest is returned to the City by the designated treatment or disposal facility within 14 days of receipt of the material to be disposed.

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. Division 2

##### 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 amount 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 in to 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

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## 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 FDOT standards and specifications, and 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 12" 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

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## 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.
  - 1. 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.
- B. 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.
  - 1. 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.
  - 2. 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.
- C. 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 pints 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.

- D. 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.

- E. 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.

1. 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 and to match existing thicknesses, as applicable.
- B. Tack coat will be required prior to overlaying existing pavement.

##### 1.02 RELATED WORK

- A. 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 be 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 nonplastic, 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

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## 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 and to match existing thicknesses if deemed necessary by the agency having jurisdictional authority over the right-of-way. The Contractor should plan on doing any required due diligence (pavement corings) to identify existing pavement thicknesses as necessary.

##### 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:

Mix Type	Minimum Marshall Stability (%)	Flow (0.01 in)	Minimum VMA (%)	Air Voids (%)	Min Effective Asphalt 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 transfers of services to existing meters and the installation of new services and/or meters as shown on the plans or as required to reconnect existing users. Note that all water service lines should be 1-inch or 2-inch services.
- 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 shut downs 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, and the Contractor must pull Plumbing permits from the City.

# 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 other 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 layer 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 Health Department.
- 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 tie-ing 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 pre-molded 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

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## 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 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 all traffic signs within the project limits, whether shown on the Drawings or not, 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.

##### 1.05 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. Bolts: Bolts shall conform to Aluminum Association Alloy 2024-T4 with an anodic coating 0.0002-inches thick minimum and chromate sealed.
- D. Nuts: Nuts shall conform to Aluminum Association Alloy 6269-T9.
- E. Reflective Sheeting: Reflective sheeting shall conform to FDOT Type A requirements.

- F. Construction Warning Signs: The Contractor shall install traffic and warning signs during construction in accordance with OSHA, FDOT and Broward County Public Works requirements.
- G. Maintenance of Traffic and Pedestrian safety shall comply with Section 01570, 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 02751

### STORM WATER SYSTEM CLEANING AND CCTV

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This Section covers the preparatory cleaning of storm piping, inlets and manholes as needed prior to the internal survey of all infrastructure by closed-circuit television. It also covers the preparatory cleaning and root removal of infrastructure prior to rehabilitation. The CONTRACTOR shall furnish all necessary material, labor, equipment, and services required for cleaning the specific stormwater infrastructure.

##### 1.02 GENERAL

- A. Storm Piping Cleaning. The intent of cleaning is to remove foreign materials from the lines and restore the storm system to a minimum of 95% of the original carrying capacity or as required for proper seating of internal pipe joint sealing packers or performance of other specified work. It is recognized that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the CONTRACTOR will not be required to clean those specific sections. If, in the course of normal cleaning operations, damage does result from preexisting and unforeseen conditions such as broken pipe, the CONTRACTOR will not be held responsible so long as they notify the City and the Engineer in advance of any potential issues.
- B. Manhole Cleaning General. All concrete and masonry surfaces must be cleaned prior to repair. Grease, laitance, loose bricks, mortar, unsound concrete, debris, and other obstructing materials must be completely removed. Water blasting (minimum 1,200 psi) utilizing proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. Surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products.

##### 1.03 HYDRAULIC CLEANING EQUIPMENT

- A. Hydraulically Propelled Equipment. The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the mains. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery to insure removal of grease. If cleaning balls or other equipment which cannot be collapsed is used, special precautions to prevent flooding of the mains and public or private property shall be taken.
- B. High-Velocity Jet (Hydrocleaning) Equipment. All high-velocity r cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more

high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.

- C. Mechanically Powered Equipment: Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. The designated storm piping sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. The equipment shall dislodge, transport and remove all sludge, mud, sand, gravel, rocks, bricks, grease, roots, sticks, and all other debris from the interior of the pipe and manholes. The equipment and methods selected shall be based on the conditions of lines and manholes at the time the work commences and shall be satisfactory to the OWNER. If cleaning of an entire section cannot be successfully performed from one manhole or inlet, the equipment shall be set up on the other manhole or inlet and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire piping section from inlet to inlet or manhole to manhole, the cleaning effort shall be stopped, and sufficient inspection performed so that the OWNER can be notified of the reason for inability to continue.

### 3.02 CLEANING PRECAUTIONS

- A. During all cleaning and preparation operations all necessary precautions shall be taken to protect the storm system infrastructure from damage. During these operations, precautions shall also be taken to insure that no damage is caused to public or private property adjacent to or served by the system or its branches.
- B. Satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the lines are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of public or private property being served by the infrastructure. When possible, the system flow shall be utilized to provide the necessary pressure for hydraulic cleaning devices. When additional water from fire hydrants is necessary to avoid delay in normal work procedures, the water shall be conserved and not used unnecessarily. Hydrant flow meters must be used, and water paid for by the Contractor for all cleaning and flushing efforts. The CONTRACTOR shall employ operational hydrant meters to be obtained from

the OWNER and shall obtain water only from the OWNER's hydrants. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant.

### 3.03 MATERIAL REMOVAL

- A. All sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream inlet or manhole for the section being cleaned. Passing material from manhole section to manhole section, which could cause line stoppages, accumulations of sand, or damage pumping equipment, shall not be permitted.
- B. Under no circumstances shall sludge or other debris removed during these operations be dumped or spilled into the streets, ditches, storm drains or sanitary sewers. The CONTRACTOR shall remove from the site and properly dispose of all solids or semi-solids recovered during the cleaning operation. The CONTRACTOR shall obtain permits and make arrangements as required to properly dispose of solids and pay for all costs for debris removal and transport.
- C. The CONTRACTOR is advised that he shall not dispose of this material by legal or illegal dumping on private or public property, by sale to others, or any means other than those given above.
- D. The CONTRACTOR shall keep his haul route and work area(s) neat and clean and reasonably free of odor and shall bear all responsibility for the cleanup of any spill which occurs during the transport of cleaning/surface preparation by-products and the cleanup of any such material which is authorized by or pursuant to this Contract and in accord with applicable law and regulations. The CONTRACTOR shall immediately cleanup any such spill, or waste. If the CONTRACTOR fails to cleanup such spill, or waste immediately, the OWNER shall have the right to cleanup or arrange for its cleanup and may charge to the CONTRACTOR all costs, including administrative costs and overhead, incurred by the OWNER in connection with such cleanup. The OWNER may also charge to the CONTRACTOR any costs incurred or penalties imposed on the OWNER as a result of any spill, dump or discard. Under no circumstances is this material to be discharged into the waterways or any place other than where authorized to do so by the appropriate authority. The term "CONTRACTOR" as used in this section shall include the CONTRACTOR's subcontractors and other Contractors.
- E. The general requirements for vehicles hauling such waste materials are as follows: Transport vehicles must be of type(s) approved for this application by the political jurisdictions involved. General requirements are that the vehicles have watertight bodies, that they be properly equipped and fitted with seals and covers to prohibit material spillage or drainage, and that they be cleaned as often as is necessary to prevent deposit of material on roadways. Vehicles must be loaded within legal weight limits and operated safely within all traffic and speed regulations.
- F. The routes used by the CONTRACTOR for the conveyance of this material on a regular basis shall be subject to approval by the governing authority having jurisdiction over such routes.

### 3.04 DISPOSAL OF MATERIALS

- A. All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of by the CONTRACTOR in a legal and sanitary manner as approved by appropriate authorities, at the CONTRACTOR's cost. Copies of records of all disposal shall be furnished to the

OWNER, indicating disposal site, date, amount and a brief description of material disposed. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the CONTRACTOR be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as acceptable to the OWNER.

### 3.05 ROOT REMOVAL

- A. Roots shall be removed in the designated sections and manholes where root intrusion is indicated on the work order. Special attention should be exercised during the cleaning operation to assure almost complete removal of roots from the joints. Any roots which could prevent the traveling of the packer or could prevent the proper application of chemical sealants, or could prevent the proper seating and application of cured-in-place, fold-and-formed or sectional cured-in-place liners, shall be removed. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners.

### 3.06 ACCEPTANCE OF CLEANING OPERATION

- A. Acceptance of line cleaning shall be made upon the successful completion of the television survey and shall be to the satisfaction of the OWNER. The OWNER must review and approve all pre and post-cleaning television survey tapes and has accepted the cleaning. If television survey shows the cleaning to be unsatisfactory, the CONTRACTOR shall be required to reclean and reinspect the line until the cleaning is shown to be satisfactory. In areas where television survey is not performed, the OWNER may require the CONTRACTOR to pull a double squeegee (with each squeegee the same diameter as the main(s)) through each manhole or inlet section as evidence of adequate cleaning. If internal sealing is to follow the television survey, particular attention should be given to the adequacy of the cleaning to insure that proper seating of the sealing packer can be achieved.
- B. In the event that special cleaning involving the mechanical removal of roots, grease, and/or tuberculation has been authorized, acceptance of line cleaning shall be made upon the successful completion of the post-cleaning television survey and shall be to the satisfaction of the OWNER. Liner installation shall not be initiated until the OWNER has reviewed the post-cleaning television survey tapes and has accepted the cleaning.
- C. In addition, on all those lines which have sags or dips, to an extent that the television camera lens becomes submerged for three (3) or more feet during the television inspection, the CONTRACTOR shall pull double squeegee and/or sponges through the line in order to remove the water from those dips or sags, or draft the water by means of high-velocity jet cleaners. Water removal shall be performed until the television camera lens will no longer be submerged. This requirement may be waived by the OWNER if the water in which the camera lens is submerged, is clear enough to allow the identification of pipe defects, cracks, holes and location of service taps.

### 3.07 FIELD QUALITY CONTROL

- a. Mandatory Closed-Circuit Television (CCTV) Inspections:
- i. Pre-CCTV Inspection: Prior to the work being started, internal storm video inspection must be performed on all existing storm system piping by the Contractor to check for alignment, deflections and other potential issues. The television inspection shall also be used to check for cracked, broken, or otherwise defective pipe and overall pipe integrity.
  - ii. Post-CCTV Inspection: All newly installed storm piping requires post-CCTV inspections. The post-CCTV video internal inspection will be performed in 2 stages. The first inspection shall be within 30-days after the installation of the storm pipe. The second post-CCTV inspection of the storm pipe shall be before the end of the 1-year warranty period. Timely reports must be provided to the City for review and approvals.
  - iii. The maximum vertical sag acceptable is 5% of pipe diameter.
  - iv. The Contractor shall be required to repair or replace the pipeline from manhole to manhole or inlet to inlet, if more than two couplings need to be use for correction.
  - v. Prior to repair or replacement of failed storm pipe, the method of repair or replacement shall be submitted to the City for approval. Pressure grouting of pipe shall not be considered as an acceptable method of repair.

END OF SECTION

## SECTION 02752

### REMOVAL AND DISPOSAL OF MATERIAL IN STORM WATER PIPING

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This Section covers the removal and disposal of debris/sediment in the operational storm water piping. The CONTRACTOR shall furnish all necessary material, labor, equipment and services required for removal and disposal of the debris/sediment in the specific storm water lines.

##### 1.02 GENERAL

- A. Removal of Material in Storm Water Lines. The intent of removal foreign materials from the lines and restore the storm water piping to provide a minimum of 95% of the original carrying capacity or as required for proper drainage system operation.
- B. Disposal of Solids Removed from Storm Water Lines. All solids removed from the drainage system shall be disposed of by the contractor in an appropriately licensed landfill. Throughout the project a log is to be kept detailing the date, location, and amount of material removed from the drainage system. This log is to be given to the City in electronic format prior to project closeout. Under no circumstances shall muck or other debris removed during these operations be dumped or spilled into the streets, ditches, storm drains or other sanitary sewers. The CONTRACTOR shall remove from the site and properly dispose of all solids or semi-solids recovered during this operation.
- C. Disposal of Liquids Removed during Removal of Solids from Storm Water Lines. Liquids removed from the system may be returned (decanted) to the City's drainage system as long as the solids are settled out by use of an appropriately sized settling box with a filter bag placed over the settling box discharge AND are returned to an existing inlet through an inlet mounted sediment removal bag approved by the City. The contractor's methodology and location for proposed return water sediment removal must be reviewed and approved by the City and will be enforced throughout the duration of the project.
- D. Turbidity barriers. Prior to starting the removal of debris from storm water piping the contractor shall install floating turbidity barrier which is to be set up at the piping outfall on North Lake. All turbidity issues brought about by the piping debris removal, dewatering, or decanting activities are the responsibility of the contractor to lawfully resolve at no additional cost to the City.
- E. Piping Plugs. All storm water piping plugs are to be removed from the pipes during rainfall, pending rainfall, and at the completion of each day's work.

- F. Acceptance of Removal of Debris from Piping. Acceptance of debris removal from the specified sections of the storm water piping shall be made upon the successful completion of the television survey inside the piping and shall be to the satisfaction of the OWNER. If television survey shows the debris removal to be unsatisfactory, the CONTRACTOR shall be required to removal additional debris and provide an additional television survey of the storm water piping until the debris removal is shown to be satisfactory.

END OF SECTION

## SECTION 02753

### PREPARATORY CLEANING AND ROOT REMOVAL

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This Section covers the preparatory cleaning of sewer lines and manholes as needed prior to the internal survey of the sewer lines by closed-circuit television. It also covers the preparatory cleaning and root removal of sewer lines and the cleaning of manholes prior to rehabilitation. The CONTRACTOR shall furnish all necessary material, labor, equipment and services required for cleaning the specific sewer lines.

##### 1.02 GENERAL

- A. Sewer Line Cleaning. The intent of sewer line cleaning is to remove foreign materials from the lines and restore the sewer to a minimum of 95% of the original carrying capacity or as required for proper seating of internal pipe joint sealing packers or performance of other specified work. It is recognized that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the CONTRACTOR will not be required to clean those specific sewer sections. If, in the course of normal cleaning operations, damage does result from preexisting and unforeseen conditions such as broken pipe, the CONTRACTOR will not be held responsible.
- B. Manhole Cleaning General. All concrete and masonry surfaces must be cleaned prior to repair. Grease, laitance, loose bricks, mortar, unsound concrete, and other materials must be completely removed. Water blasting (minimum 1,200 psi) utilizing proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. Surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products.

##### 1.03 HYDRAULIC CLEANING EQUIPMENT

- A. Hydraulically Propelled Equipment. The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery to insure removal of grease. If sewer cleaning balls or other equipment which cannot be collapsed is used, special precautions to prevent flooding of the sewers and public or private property shall be taken.
- B. High-Velocity Jet (Hydrocleaning) Equipment. All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring



action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.

- C. Mechanically Powered Equipment: Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.

## PART 2 -- PRODUCTS (NOT USED)

## PART 3 -- EXECUTION

### 3.01 GENERAL

- A. The designated sewer sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. The equipment shall dislodge, transport and remove all sludge, mud, sand, gravel, rocks, bricks, grease, roots, sticks, and all other debris from the interior of the sewer pipe and manholes. The equipment and methods selected shall be based on the conditions of lines and manholes at the time the work commences and shall be satisfactory to the OWNER. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire manhole section, the cleaning effort shall be stopped and sufficient inspection performed so that the OWNER can be notified of the reason for inability to continue.

### 3.02 CLEANING PRECAUTIONS

- A. During all cleaning and preparation operations all necessary precautions shall be taken to protect the sewer from damage. During these operations, precautions shall also be taken to insure that no damage is caused to public or private property adjacent to or served by the sewer or its branches.
- B. Satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the sewer line are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. When possible, the flow of sewage in the sewer shall be utilized to provide the necessary pressure for hydraulic cleaning devices. When additional water from fire hydrants is necessary to avoid delay in normal work procedures, the water shall be conserved and not used unnecessarily. The CONTRACTOR shall employ operational hydrant meters to be obtained from the OWNER, and shall obtain

water only from the OWNER's hydrants. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant.

### 3.03 MATERIAL REMOVAL

- A. All sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section, which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.
- B. Under no circumstances shall sludge or other debris removed during these operations be dumped or spilled into the streets, ditches, storm drains or other sanitary sewers. The CONTRACTOR shall remove from the site and properly dispose of all solids or semi-solids recovered during the cleaning operation. The CONTRACTOR shall obtain permits and make arrangements as required to properly dispose of solids.
- C. The CONTRACTOR is advised that he shall not dispose of this material by legal or illegal dumping on private or public property, by sale to others, or any means other than those given above.
- D. The CONTRACTOR shall keep his haul route and work area(s) neat and clean and reasonably free of odor, and shall bear all responsibility for the cleanup of any spill which occurs during the transport of cleaning/surface preparation by-products and the cleanup of any such material which is authorized by or pursuant to this Contract and in accord with applicable law and regulations. The CONTRACTOR shall immediately cleanup any such spill, or waste. If the CONTRACTOR fails to cleanup such spill, or waste immediately, the OWNER shall have the right to cleanup or arrange for its cleanup and may charge to the CONTRACTOR all costs, including administrative costs and overhead, incurred by the OWNER in connection with such cleanup. The OWNER may also charge to the CONTRACTOR any costs incurred or penalties imposed on the OWNER as a result of any spill, dump or discard. Under no circumstances is this material is to be discharged into the waterways or any place other than where authorized to do so by the appropriate authority. The term "CONTRACTOR" as used in this section shall include the CONTRACTOR's subcontractors and other Contractors.
- E. The general requirements for vehicles hauling such waste materials are as follows: Transport vehicles must be of type(s) approved for this application by the political jurisdictions involved. General requirements are that the vehicles have watertight bodies, that they be properly equipped and fitted with seals and covers to prohibit material spillage or drainage, and that they be cleaned as often as is necessary to prevent deposit of material on roadways. Vehicles must be loaded within legal weight limits and operated safely within all traffic and speed regulations.
- F. The routes used by the CONTRACTOR for the conveyance of this material on a regular basis shall be subject to approval by the governing authority having jurisdiction over such routes.

### 3.04 DISPOSAL OF MATERIALS

- A. All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of by the CONTRACTOR in a legal and sanitary manner as approved by appropriate authorities, at the CONTRACTOR's cost. Copies of records of all disposal shall be furnished to the OWNER, indicating disposal site, date, amount and a brief description of material disposed. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the CONTRACTOR be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as acceptable to the OWNER.

### 3.05 ROOT REMOVAL

- A. Roots shall be removed in the designated sections and manholes where root intrusion is indicated on the work order. Special attention should be exercised during the cleaning operation to assure almost complete removal of roots from the joints. Any roots which could prevent the traveling of the packer or could prevent the proper application of chemical sealants, or could prevent the proper seating and application of cured-in-place, fold-and-formed or sectional cured-in-place liners, shall be removed. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners.

### 3.06 ACCEPTANCE OF CLEANING OPERATION

- A. Acceptance of sewer line cleaning shall be made upon the successful completion of the television survey and shall be to the satisfaction of the OWNER. Liner installation shall not be initiated until the OWNER has reviewed the post-cleaning television survey tapes and has accepted the cleaning. If television survey shows the cleaning to be unsatisfactory, the CONTRACTOR shall be required to reclean and reinspect the sewer line until the cleaning is shown to be satisfactory. In areas where television survey is not performed, the OWNER may require the CONTRACTOR to pull a double squeegee (with each squeegee the same diameter as the sewer) through each manhole section as evidence of adequate cleaning. If internal sealing is to follow the television survey, particular attention should be given to the adequacy of the cleaning to insure that proper seating of the sealing packer can be achieved.
- B. In the event that special cleaning involving the mechanical removal of roots, grease, and/or tuberculation has been authorized, acceptance of sewer line cleaning shall be made upon the successful completion of the post-cleaning television survey and shall be to the satisfaction of the OWNER. Liner installation shall not be initiated until the OWNER has reviewed the post-cleaning television survey tapes and has accepted the cleaning.

- C. In addition, on all those lines which have sags or dips, to an extent that the television camera lens becomes submerged for three (3) or more feet during the television inspection, the CONTRACTOR shall pull double squeegee and/or sponges through the line in order to remove the water from those dips or sags, or draft the water by means of high-velocity jet cleaners. Water removal shall be performed until the television camera lens will no longer be submerged. This requirement may be waived by the OWNER if the water in which the camera lens is submerged, is clear enough to allow the identification of pipe defects, cracks, holes and location of service taps.

END OF SECTION

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## SECTION 02762

### TELEVISIONING SANITARY SEWER SYSTEMS

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. The Work covered within this Section is for the internal closed-circuit television (CCTV) inspection of sanitary sewer pipes. The Contractor shall perform sewer-televising work as necessary to thoroughly document the condition of all sewers, service lateral connections, and manhole corbel, barrel and cone-sections in the study area. The sanitary sewer and service laterals shall be carefully inspected to determine alignment, grade variations, separated joints, location and extent of any deterioration, breaks, obstacles, obstructions, debris, quantities of infiltration/inflow and the locations of service connections.
- B. The quality of all Work specified in this Section shall meet or exceed the requirements of the National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (latest edition), except as described in this Section. Applicable portions of this Section that inadvertently fall below those standards shall be corrected and maintained at the NASSCO standards as a minimum requirement, at no additional cost to the Owner.

##### 1.02 REQUIREMENTS

- A. The Contractor shall inspect the sewer interior using a color closed circuit television camera (CCTV) and document the inspection on a digital recorder. All inspection video shall be captured in either MPEG or Windows Media Video (.WMV) file format and saved portable hard drives for submittal. Each inspected main line sewer reach, referenced manhole to manhole, and each inspected sewer lateral referenced to the property address and corresponding sewer main should have an associated MPEG or WMV file. Digital photographs (.JPG files), inspection reports (.PDF files) and any handwritten inspection logs or field maps shall accompany the video inspections for each sewer reach (manhole-to-manhole) or lateral inspected.
- B. Contractor shall provide inspection video, data and reports in accordance with the requirements specified herein. Contractor shall provide all video on portable hard drive as specified. All Work will conform to current NASSCO Pipeline Assessment Certification Program (PACP) coding conventions and all software used by the Contractor will be PACP compliant. An electronic database will be provided by the Contractor in a PACP exported format approved by the Owner.
- C. The Contractor shall provide comments as necessary to fully describe the existing condition of the sewer on the inspection forms.

- D. Contractor shall be responsible for modifications to equipment and/or inspection procedures to achieve report material of acceptable quality.
- E. No Work shall commence prior to approval of the submitted material by the Owner. Once accepted, the report material shall serve as a standard for the remaining Work.
- F. All televising shall be performed by a third party, not directly by the Contractor.

#### 1.03 QUALITY ASSURANCE

- A. Qualifications: Firms regularly engaged in the cleaning and televising of sewer systems for not less than 5 years. Firms shall submit references at the request of the OWNER.
- B. Each CCTV field inspection supervisor shall be NASSCO PACP certified. Use of PACP certified technicians to review/document defects in the office (post process) is not acceptable.
- C. The inspection Contractor must have an internal quality assurance/quality control program in place and all inspection data shall be subjected to the procedures prior to submittal to the Owner. The Owner will perform QA/QC audits on submitted data.
- D. QA/QC shall be performed by NASSCO PACP certified personnel.

#### 1.04 SCOPE OF WORK

- A. Submittals shall be submitted to the Owner for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300.
- B. The following deliverables shall be submitted on a portable hard drive at the completion of inspection:
  - 1. Inspection videos saved in MPEG format or Windows Media video format.
  - 2. Electronic version (.pdf) of the pipe inspection reports.
  - 3. PACP export pipe inspection database (.mdb).
  - 4. Inspection digital photographs in JPEG format.
  - 5. Map of sub area depicting area inspected, inspection status, asset identification numbers and mark ups.
  - 6. QA/QC report.
- C. The above deliverables shall be submitted monthly to the Owner for approval. Application for payment shall be made after review and approval by the Owner.
- D. The sewer inspection video, report documents, and sewer inspection database shall be in accordance with Owner data standards and NASSCO PACP.

## 1.05 NOTIFICATION

- A. Contractor shall notify the Owner a minimum of 72-hours prior to performing any inspection work. No payment will be made for inspections performed without proper notification.

## PART 2 - PRODUCT

### 2.01 EQUIPMENT

- A. Closed Circuit Television Camera: The television camera used for the inspection shall be one specifically designed and constructed for sanitary sewer inspection. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100 % humidity/submerged conditions. The CCTV camera equipment will provide a view of the pipe ahead of the equipment and of features to the side of the equipment through turning and rotation of the lens. The camera shall be capable of tilting at right angles along the axis of the pipe while panning the camera lens through a full circle about the circumference of the pipe. The lights on the camera shall also be capable of panning 90° (degrees) to the axis of the pipe.

The radial view camera must be solid-state color and have remote control of the rotational lens. The camera shall be capable of viewing the complete circumference of the pipe and manhole structure, including the cone-section or corbel. Cameras incorporating mirrors for viewing sides or using exposed rotating heads are not acceptable. The camera lens shall be an auto-iris type with remote controlled manual override.

If the equipment proves to be unsatisfactory, it shall be replaced with adequate equipment. The camera unit shall have sufficient quantities of line and video cable to inspect 2 complete, consecutive sewer reaches with access approximately 750-feet apart.

The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Owner. The television camera, electronic systems and monitor shall provide an image that meets the following specifications, or approved equal:

1. The gray scale shall show equal changes in brightness ranging from black to white with a minimum of five stages.
2. With the monitor control correctly adjusted, the 6-colors; Yellow, Cyan, Green, Magenta, Red, and Blue, plus black and white shall be clearly resolved with the primary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no color tint.
3. The picture shall show no convergence or divergence over the whole of the picture. The monitor shall be at least 13-inches diagonally across the picture tube.



4. The live picture on the CCTV monitor shall be capable of registering a minimum of 470 lines horizontal resolution and be a clear, stable image with no interference.
5. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear in-focus picture of the entire inside periphery of the sewers and laterals for all conditions except submergence. Under ideal conditions (no fog in the sewer) the camera lighting shall allow a clear picture up to 5 pipe diameter lengths away for the entire periphery of the sewer. The lighting shall provide uniform light free from shadows or hot spots.
6. The camera light head shall include a high-intensity side viewing lighting system to allow illumination of internal sections of lateral sewer connections.
7. Camera focal distance shall be remotely adjustable through a range of 6-inches to infinity.
8. Picture quality and definition shall be to the satisfaction of the Owner.
9. The monitor and software shall also be able to capture and save screen images of typical sewer details and all defects. Screen images shall be embedded into the pipe inspection report document submitted with the inspection video.
10. The video camera shall be capable of displaying on screen data as specified in paragraph 3.08 herein.
11. Depth gage: The camera shall have a depth gage or approved method to measure deflection in the pipe and joint separation approved by the Owner.
12. The camera shall have zoom capabilities to be able to view the entire depth of a 20-foot deep manhole from the bottom during inspection.

B. Lateral Video Camera

Lateral cameras may be push type or launched from the sewer main line. Lateral cameras shall be color, shall be self-leveling, and equipped with a footage counter to provide on-screen display of footage measurement. Monitor resolution shall be as specified above in paragraph 2.01 A Close Circuit Television Camera, or approved equal.

C. Video Capture System

The video and audio recordings of the sewer inspections shall be made using digital video equipment. A video enhancer may be used in conjunction with, but not in lieu of, the required equipment. The digital recording equipment shall capture sewer inspection on DVD disks or hard drive, with each sewer reach inspection recorded as an individual movie file (.MPEG, .MPG, or .WMV) or approved equal. The video files will be named in accordance with the Owner file naming convention contained in paragraph 3.11 herein.

1. The video file names will be referenced in the inspection database and in an inspection report generated in PDF format. The pipeline collection and real time video capture and data acquisition systems shall be provided.
2. The system shall use the most current PACP compliant application software and shall be fully object oriented or approved equal. It shall be capable of printing pipeline inspection reports with captured images of defects or other related significant visual information on a standard color printer.
3. The imaging capture system shall store digitized color picture images and be saved in digital format on a DVD, hard drive or approved equal. Also, this system shall have the capability to supply the Owner with inspection data reports for each line segment.
4. The Contractor shall have the ability to store the compressed video files in industry standard and approved Owner format and be transferable with the PACP compliant inspection database.
5. The Contractor's equipment shall have the ability to "Link". "Linking" is defined as storing the video time frame code with each observation or defect with the ability to navigate from/to any previously recorded observation or defect instantaneously.
6. The system shall be able to produce data reports to include, at a minimum, all observation points and pertinent data. All data reports shall match the defect severity codes in accordance with PACP naming conventions
7. The data-sorting program shall be capable of sorting all data stored using generic sort key and user defined sort fields.
8. Camera footage, date & manhole numbers shall be maintained in real time and shall be displayed on the video monitor as well as the video character generators illuminated footage display at the control console.
9. Digital video shall be defined as ISO-MPEG Level 1 (MPEG-1) coding having a resolution of 352 pixels (x) by 240 pixels (y) (minimum) and an encoded frame rate of 29.97 frames per second. The digital recording shall include both audio and video information that accurately reproduces the original picture and sound of the video inspection. The video portion of the digital recording shall be free of electrical interference and shall produce a clear and stable image. The audio portion shall be sufficiently free of background and electrical noise so as to produce an oral report that is clear and discernible.
10. Inspection software shall be PACP compliant versions of CUES Granite XP, WinCan, Flexidata, or approved equal.

11. The CCTV equipment/software shall be capable of producing digitized images of all sewer line defects, manhole defects, and sewer line service connections in .jpeg format. Contractor shall plan to take digital still images of each defect, construction features and service connection to clearly depict it. More images may be necessary depending upon the condition of the pipe.

## 2.02 REPORTING CAPABILITIES

- A. The CCTV system shall be capable of printing pipeline inspection reports with pipeline schematics and captured images of defects and other related significant visual information. The system shall have the ability to display any combination of the following formats and features simultaneously.

The following information is mandatory for all inspections:

1. Inspection Information: Refers to the area of pipe to be inspected between 2 manholes or the address of the lateral to be inspected.
  - a. Project Name
  - b. Surveyed by (Operator/Surveyor's name)
  - c. Operator/Surveyor Certificate number
  - d. System Owner
  - e. Date
  - f. Drainage Area (tributary pump station number)
  - g. Time
  - h. Sheet number (report sheet number)
  - i. Street Name and Number
  - j. Locality (Owner)
  - k. Additional Location Information (e.g. backyard, parking lot, etc)
  - l. Upstream Manhole Number (Owner standard Asset Number)
  - m. Upstream MH rim to invert (depth)
  - n. Downstream Manhole Number (Owner standard Asset Number)
  - o. Downstream MH rim to invert (depth)
  - p. Direction of inspection (Upstream or Downstream)

- q. DVD Identification Number
  - r. Flow control (e.g. plugged, lift station, bypassed, not controlled)
  - s. Type of Pipe
  - t. Pipe Height
  - u. Pipe Width
  - v. Pipe Shape
  - w. Pipe Material
  - x. Lining Material (for lined sewers)
  - y. Pipe Joint Length
  - z. Purpose of Inspection (new line, year-end warranty, CIP R/R project, etc.)
  - aa. Pre Cleaning (jetter, heavy cleaning, no pre-cleaning)
  - bb. Media Number (Video file name)
  - cc. Weather
  - dd. Additional information/Comments
2. Observation Data: Refers to the portion of pipe where an observation is discovered. Observations shall be noted by text descriptions and defect code number using PACP defects codes, still frame pictures and video clips captured and recorded. Each observation shall include the following:
- a. Actual observation footage
  - b. Video reference
  - c. Location of defect; clock position
  - d. Code (Group/Descriptor/Modifier/Severity)
  - e. Whether it is a continuous defect
  - f. Whether the defect occurs at a joint
  - g. Severity level
  - h. DVD Identification number
  - i. DVD counter

- j. Final footage
  - k. Video clip ID for each observation
  - l. Image reference (file name of photos)
  - m. Remarks (as appropriate or needed)
3. Formats: Standard and/or custom designed reports shall have the following formats available and shall be able to be produced in hard copy or viewed on the monitor.
- a. Site Observation: Displays detailed site observation reports in landscape or portrait views.
  - b. Directory Report: Displays a list of all the projects sorted by pump station number and manhole number.
  - c. Picture Reports: Displays site data and include full size single photos or half size double photos of discrepancies.
  - d. Pipe Run: Displays a graphical display of the site indicating footage, observations, and comments.
  - e. Project Data: Displays the project, client, and Contractor information.
  - f. Custom Sort: Creates user-defined reports of selected site, project, and observation data.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Prior to inspection the Contractor shall obtain pipe and manhole asset identification numbers from the Owner to be used during inspections. Inspections performed using identification numbers other than the Owner assigned numbers will be rejected.
- B. Inspection shall not commence until the sewer section to be televised has been completely cleaned in conformance with Specification Section 02761 "Cleaning Sanitary Sewer Systems."
- C. Inspection of newly installed sewers (not yet in service) shall not begin prior to completion of the following:
  - 1. All manhole work, including installation of inverts.
  - 2. Installation of all lateral services.
  - 3. Vacuum tests of all manholes.

4. Pipe air testing.
  5. Coordination with witness required.
- D. After the sewer main and/or lateral cleaning operation is completed, the line sections shall be visually inspected internally by means of color closed-circuit television. The television inspection shall be performed one line section at time.
  - E. CCTV inspection shall require a minimum of 2 certified personnel with PACP certifications.
    1. One (1) person shall have PACP certification that will lead or supervise each field CCTV crew for inspection and a minimum of 2-years in the role of a lead person.
    2. One (1) person shall have PACP certification serving in the role as a QA/QC management supervisor.
  - F. Prior to sewer televising, the contractor shall flush the portion of sewer being televised until the water flow in the downstream section is stable and no flow is experienced.
  - G. Contractor shall perform sewer-televising work within 24-hours of said sewer being cleaned. If said sewer is not televised within the required 24-hour time limit, the sewer shall be re-cleaned prior to televising at no additional expense to the Owner.
  - H. The Contractor shall also inspect and document all manholes included in this Work. The video recording shall begin as the camera is lowered down the manhole all the way to the preset footage and continuously throughout the pipe reach until the downstream manhole is reached.
  - I. The Contractor shall lower the camera into the start manhole and record the camera entry into the sewer, observing the manhole as the camera enters.
  - J. The camera shall pan the periphery of the start and finish manhole from casting to invert. To achieve this, the CCTV camera operator shall pan and zoom the manhole to obtain the best possible image of the manhole, including the wall, cone and chimney section(s).
  - K. The depth of each manhole shall be measured to the nearest 1/10th of a foot and documented on the inspection forms. Estimates of manhole depths will not be accepted.
  - L. The CCTV camera shall be positioned as close to the spring line as possible while maintaining the required equipment stability.
  - M. Wherever possible the inspections shall be performed in the upstream to downstream direction. All sewer segments shall be recorded in a logical order in the same direction they are cleaned and televised.
  - N. In the event that access to some manholes is restricted, permission may be granted by the Owner to direct the camera through the sewer in an upstream direction, against the flow.

- O. When sewer conditions prevent forward movement of the camera, the camera shall be withdrawn, and Contractor shall televise the line from the opposite direction.
- P. The camera shall be directed through the sewer in a downstream direction, with the flow, at a uniform, slow rate. In no case will the video camera record while moving at a speed greater than 30-feet per minute. If, during the course of the Project, the inspection is rejected due to camera speeds exceeding 30-feet per minute, the inspection recordings shall be redone, at no additional cost to the Owner.
- Q. If a new manhole is discovered in the field that was not on current maps, a new manhole identification number will be assigned by Owner. The Owner shall assign the manhole the next number above the highest manhole number within the sub area. The data / video files shall then be re-named to include the new MH ID, and a new CCTV inspection shall be started from the new MH ID. Contractor shall consult with the Owner for assignment of new manhole identification numbers. Contractor shall note in the inspection form comments that a new manhole ID has been assigned as well as provide a marked up map indicating the newly found manhole and assigned manhole ID.
- R. Remaining water levels within existing sewers to be inspected shall not exceed 5% of the pipe diameter. If water levels prevent adequate televising of the sewer, then conducting the Work during low flow periods or other methods like plugging and bypass pumping shall be implemented.
- S. For inspection of new sewers (not yet in service), the Contractor shall introduce clean water into the upstream manhole and keep water flowing until flow is observed at the downstream manhole location.
- T. The survey unit shall be slowed, stopped, or backed up to perform detailed inspections of significant features. The camera shall be stopped at all joints, rolled gaskets, gaps, defects, changes in material, water level, size, side connections, manholes, junctions, or other unusual areas, etc. When stopped at the defect or feature, the operator shall pan the camera to the area and along the circumference of the pipe.
- U. The camera unit shall be paused long enough at pipe joints and areas suspected of leaking to determine if a leak exists currently or if deposits have occurred.
- V. The operator shall also record audio of the type of defect or feature, clock position, footage, extent or other pertinent data.
- W. Digital photographs or screen captures shall be taken at all laterals; defects and general condition photographs shall be taken at least every 200-feet.
- X. At the Contractor's discretion or direction of the Owner, the camera shall be stopped or backed up (when conditions allow) to view and analyze conditions that appear to be unusual or uncommon for a sound sewer. The lens and lighting shall be readjusted, if need be, in order to ensure a clear, distinct, and properly lighted feature.

- Y. Audio shall be recorded during each inspection by the operating technician, electronic voice text recognition or approved equal on the inspection video as the sewer is inspected and shall include the sewer location, identification of beginning and terminating manholes including location (address or cross streets), inspection direction, length of inspection, side sewer identification, flow information, complete descriptions of the sewer line conditions as they are encountered, description of the rehabilitation work, reason for termination, and other relevant commentary to the inspections. Voice descriptions should be made:

1. At points of pipe failure or weakness.
2. At points of infiltration.
3. At the location of service connections.
4. At points where unusual conditions are noted, and
5. At points where digital still photos are taken.

In addition, the audio reports shall include the distance traveled on the specific run, a description of abnormal conditions in the sewer and side sewer connections as they are encountered, explanations for pausing, backing up, or stopping the survey, and the final measured center to center distances between consecutive manholes. The audio portion of the composite video shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of the oral report. Audio dubbing after the inspection is prohibited.

- Z. Video recordings shall include a continuous video display/readout of similar information, as described in paragraph 3.08 herein. A separate digital video file shall be made for each pipe reach inspected.
- AA. Contractor shall coordinate with the Owner prior to commencement of Work to ensure inspection is witnessed and accomplished in a manner acceptable to the Owner.
- BB. If the video and/or audio recording is of poor quality, the Owner has the right to require a re-submittal of the affected sewer sections and no payment will be made until an acceptable video and audio recording is made, submitted to, and accepted by the Owner.
- CC. Measurement for location of defects and actual length of pipe shall be by means of a calibrated meter on the camera with a digital readout on the video monitor. This readout shall be included in the video recording. Marking on cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Measurement will be accurate to 1-foot per 100-feet of inspected pipe.
- DD. The Contractor inspection units shall be equipped with adequate back up equipment and spare parts so field repairs to equipment can be made and down time is minimized.
- EE. The Contractor shall be responsible for all traffic control measures required to perform the Work.



- FF. Lateral inspections shall be performed from the main line using a lateral launch camera or shall be pushed from cleanouts to the sewer main using sewer rods. Lateral camera travel measurements shall be displayed on screen and on the captured video.
- GG. If lateral inspections are performed from the sewer main as part of the main line inspection, the lateral shall be logged in the main line inspection report per PACP requirements and the "comment" field of the main line inspection report shall be used to document the lateral identification number, defects observed, footage of all lateral defects, connecting pipes and clean outs. If lateral inspections are not performed as part of the main sewer inspection, a separate PACP pipe inspection record shall be created for each lateral. Refer to paragraph 3.10 for numbering requirements.

### 3.02 PRE-CONSTRUCTION INSPECTION

#### A. Procedure

1. Prior to any repair work, the entire sewer line (from manhole to manhole) shall be televised. The pre-construction inspection shall be used to determine whether the line has been cleaned sufficiently; to confirm the location and nature of defects; and to confirm that the proposed method of repair is proper method for the defects observed.
2. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 30-feet per minute. Manual winches, power winches, TV cable, and power rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation, the television camera will not pass through the entire manhole section, the Contractor shall set up his equipment so that the inspection can be performed from the opposite manhole (reverse set-up).
3. When manually operated winches are used to pull the television camera through the line, telephones, radios or other suitable means of communication shall be set up between the 2 manholes of the section being inspected to insure good communication between members of the crew.
4. The importance of accurate distance measurements is emphasized. The location of defects shall be within  $\pm 2$  feet.
5. During the internal inspection the television camera shall be temporarily stopped at each defect along the line. The Contractor shall record the nature and location of the defect. Where defects are also active infiltration sources, the rate of infiltration in gallons per minute shall be estimated by the Contractor and recorded. The camera shall also be stopped at active service connections where flow is discharging. Flows from service connections that are determined to be infiltration/inflow shall also be recorded.

B. Documentation of Television Inspection

1. Television Inspection Logs: Printed location records shall be kept by the Contractor and will clearly show the location in relation to an adjacent manhole of each infiltration point observed during inspection. In addition, other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, and other discernible features will be recorded and a copy of such records will be supplied to the Owner. The Contractor shall record all visual observations on a "Television Inspection Report" form.
2. Once recorded, the digital data shall be labeled and become the property of the Owner. The Contractor shall have all readings and necessary playback equipment readily accessible for review by the Owner during the Project.

3.03 POST CONSTRUCTION INSPECTION

A. Procedure

1. After the sewer line rehabilitation has been completed, the entire sewer line from manhole to manhole shall be televised. The post construction inspection shall be used to determine whether or not all of the approved sewer line defects and infiltration sources previously located have been fully repaired to the satisfaction of the Owner.
2. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 30-feet per minute. Manual winches, power winches, TV cable, power rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation, the television camera will not pass through the entire manhole section, the Contractor shall set up his equipment so that the inspection can be performed from the opposite manhole or direction.(reverse-setup)
3. When manually operated winches are used to pull the television camera through the line, telephones, radios or other suitable means of communication shall be set up between the 2 manholes of the section being inspected to insure good communication between members of the crew.
4. The importance of accurate distance measurements is emphasized. The location of defects shall be within 1-foot.
5. During the internal inspection the television camera shall be temporarily stopped at each repair. The camera shall also be stopped at any unnoticed or non-repaired point source of infiltration.

### 3.04 SEWER BYPASSING AND DEWATERING

Contractor shall be responsible for bypassing sewer flow around his work and dewatering of sewer lines in accordance with the requirements of Section 01516 "Collection System Bypass". Where sags or submerged sections of the sewer are encountered during TV inspection, the Contractor shall first complete inspection of the entire reach to determine the extent of such areas prior to dewatering the sewer. Dewatered sections of the sewer shall then be TV inspected.

On all sewer mains which have sags or dips, to an extent that the television camera lens becomes submerged during the television inspection, the Contractor shall use a high pressure cleaner to draw the water out of the pipe, or other means, to allow inspection of the pipe and identification of pipe defects, cracks, holes and location of service connections.

### 3.05 LINEAR MEASUREMENT

The CCTV camera location footage counter shall be zeroed at the beginning of each inspection. The survey unit location entered on the footage counter at the start of the inspection shall allow for the distance from the accepted start of the length of the sewer to the initial point of observation of the camera (pre-set footage). In the case of resuming an inspection at an intermediate point within a sewer reach, the footage counter shall be set to start at the distance from the upstream maintenance hole to that point, as previously recorded by the counter. The Contractor shall ensure that the footage counter starts to register immediately when the survey unit starts to move.

The lateral camera shall be pushed from cleanouts to the sewer main and be equipped with a footage counter to display and record inspection footage. Maximum rate of travel shall be 30-feet per minute when recording.

Prior to commencing inspections, the Contractor shall demonstrate compliance with the linear measurement tolerance specified below:

- A. The equipment shall measure the location of the camera unit in 1-foot increments from the beginning (upstream end) of each continuous section. This footage location must be displayed on the CCTV monitor and recorded on the videotapes.
- B. The accuracy of the measured location shall be within + 0.5% of the actual length of the sewer-reach being surveyed, or 1-foot, whichever is greater.

### 3.06 MEASUREMENT OF SAGS

The Contractor and City shall review videos and determine when sags are not acceptable. If the Contractor and City disagree on the size of a sag, the portion of sewer in question shall be televised again using a cylindrical weighted gauge (sinker) in front of the camera as an indicator of the size of the sag. Sags cannot exceed 5 percent of the pipe diameter.

### 3.07 CCTV MONITOR DISPLAY

The images displayed on the CCTV monitors will be a view of the pipe above the water surface as seen by the CCTV camera as the unit is conveyed through the sewer.

The camera lighting shall be fixed in intensity prior to commencing the survey and the white balance set to the color temperature emitted. In order to ensure color constancy, no variation in illumination shall take place during the survey.

The video equipment shall be checked using an approved test card with a color bar prior to commencing each day's survey. The camera shall be positioned centrally and parallel to the test card at a distance where the full test card just fills the monitor screen. The card shall be illuminated evenly and uniformly without any reflection.

### 3.08 DATA DISPLAYS

- A. The CCTV images shall include an initial data display that identifies the sewer reach being surveyed and a survey status display that provides continuously updated information on the location of the survey unit as the survey is being performed. These data displays shall be in alphanumeric form. The size and position of the data shall not interfere with the main subject of the monitor picture.
- B. The on-screen display should be white during inspections where the background behind the display is dark and, conversely, black where the background is light.
- C. At the beginning of each reach of sewer being inspected, the following information shall be electronically generated and displayed on the CCTV monitors as well as included in the audio track:
  - 1. Date of survey.
  - 2. Inspection company name and inspector.
  - 3. Street name or location.
  - 4. Manhole number to manhole number (in order of inspection).
  - 5. Direction of survey (upstream or downstream).
  - 6. Time of start of survey.
- D. During inspections, the following information shall be electronically generated, automatically updated, and displayed on the CCTV monitors:
  - 1. Survey unit location in the sewer line in feet and tenths of feet from adjusted zero.
  - 2. Sewer diameter.
  - 3. Upstream and downstream manholes reference numbers as per approved Drawings or Owner GIS.
  - 4. During Lateral inspections the video display shall contain the lateral location and the footage of the camera within the lateral.

### 3.09 PHOTOGRAPHS

During CCTV inspections, screen captures will be taken from the monitor images and saved electronically by the in-sewer inspection crew of typical conditions every 200-feet and at all defects, construction features, manholes and laterals. The screen capture shall have the pipe reach (identified by the upstream and downstream manholes), survey direction, footage, and date when photograph was taken. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than 1/4-inch, and shall be type-printed. The annotation shall be positioned on the front of the photograph so as to not interfere with the subject of the photograph. Photograph files shall be named by the video capture system and automatically referenced to the logged defect.

The image of the sewer shall fill the photographic image. Photographs must clearly and accurately show what is displayed on the monitor, which shall be in proper adjustment. Where significant features exist within 6-feet of each other, 1 photograph shall be made to record these features. Where there is a continuous feature, photographs shall not be taken at intervals of less than 6-feet unless absolutely necessary to show a change in the feature.

The images shall be kept electronically, copied to a hard drive, and submitted with the inspection videos, database and reports.

### 3.10 MANHOLE NUMBERING, INSPECTION FORMS AND DEFECT CODES

- A. The Contractor will be required to use the manhole numbering as shown on sewer maps provided by the Owner when performing the inspections for this project.
- B. The Owner inspection forms and standard defect codes shall be used. The defect codes, inspection forms, inspection database and inspection protocols shall be in accordance with the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) and Manhole Assessment and Certification Program (MACP).
- C. When lateral inspections are performed as part of the main sewer inspection, lateral numbers shall be referenced in the "comment" field of the main sewer PACP report. The lateral number shall be as follows:

`<Upstream Manhole ID>_<footage>_<clock position>_<L>`

Example: 39550020\_212\_02\_L

- D. When lateral inspections are not performed as part of the main sewer inspection, the main sewer inspection shall be performed first to obtain the footage and clock positions needed to identify the lateral.

### 3.11 DELIVERABLES

The Contractor will be required to submit the following deliverables at the completion of the post construction video inspection. The pre-construction video inspection deliverables shall be as defined in 3.02 of this specification.

A. Inspection Reports to include:

1. Inspection session header information (see required fields above)
2. Defect log report including photo captures from CCTV video
3. Schematic drawing of pipe showing defects
4. Format:
  - a. Adobe Acrobat PDF files: 1 report PDF per pipe
  - b. Main sewer inspection report file name:  
  
<upstream MH ID>\_<downstream MH ID>\_<Date (year\_mo\_day format)>.PDF  
  
Example: 30060002\_30060001\_2010\_02\_16.pdf
  - c. Lateral inspection report file name:  
  
<upstream MH ID>\_<footage>\_<clock position>\_<L>\_<Date (year\_mo\_day format)>.PDF\_  
  
Example: 30060002\_210\_02\_L\_2010\_02\_16.pdf

B. Inspection video files on portable hard drive, typed labels shall be attached to the face of each hard drive. The typed index labels shall include the following information:

1. Content (CCTV).
2. Contractor name.
3. Purpose of Survey.
4. Tributary Pump station number.
5. Reaches included (from Manhole Number ## to Manhole Number ##).
6. Date of survey.
7. Contract Number / Delivery Order Number (if applicable).

C. Main sewer video files shall be MPEG or Windows Media File named according to the following standard:

<Upstream MH ID>\_<Downstream MH ID>-<Inspection>\_<Date (year month day)>.wmv

Example: 39540008-39540007\_20090805.wmv

In instances where a reverse set up is necessary to perform or complete the inspection the file name shall incorporate an "R" at the end of the file name to indicate "reverse" direction. Using the file example above, if the inspection from the upstream end was halted due to an obstruction and the pipe was televised from the opposite end, the video file from the downstream to upstream direction would be assigned the following file name:

Example:39540008-39540007\_20090805\_R.wmv

- D. Lateral connection inspection video files shall be MPEG or Windows Media File named according to the following standard:

<Upstream MH ID>\_<footage>\_<clock position>\_<L>\_<date (year\_mo\_day format)>.wmv

Example: 39540008\_145\_10\_L\_2009\_08\_05.wmv

- E. Electronic Inspection Data stored and exported in a NASSCO Pipeline Assessment and Certification Program (PACP) compliant Microsoft Access database (.MDB) version 4.4 or newer delivered on DVD or portable hard drive.
- F. Inspection photograph digital files (jpeg) indexed to NASSCO PACP compliant database.
- G. Map of sub area depicting area inspected, inspection status, asset identification numbers and mark ups,
- H. Acceptable media for the video recordings portable hard drive.
- I. Inspection data noted above shall be provided to the Owner weekly throughout the inspection work.
- J. Contractor Quality Control report detailing data validation performed, pipe inspection records reviewed and results.
- K. All inspection data shall be submitted on a portable hard drive. Each hard drive shall be filled with as much data as practical to minimize the number of hard drives submitted. Sections of a single segment of sewer main shall not be recorded to more than 1 hard drive. Video footage of recorded segments shall be grouped by area and shall be submitted in sequential order relating to the area mapping designation.
- L. Upon approval by the Owner of all, or portions of, the data delivered via the portable hard drives, the approved CCTV data shall be delivered to the Owner on a portable hard drive labeled with project information. The hard drive shall clearly indicate the date of the inspection, the designated segment(s) of sewer mains(s) contained on the disk, the name of the project, the project CIP number, the pump station number, and Contractor name. The hard drive shall contain separate digital files for each manhole-to-manhole section.

- M. The database shall be comprehensive for the entire project, and additional data shall be added to the database each week.

### 3.12 ACCEPTANCE

- A. Inspection deliverables will be validated to check conformance with the specified requirements for file names, formats, quantity, resolution, data table references, in addition to checks for null fields, asset numbers, duplicate records, connectivity, material, size, and depth. Any data not passing the data validation checks will be returned to the Contractor for resubmittal.
- B. Inspection submittals will be reviewed for quality control. A minimum of 5% of the submitted inspections will be randomly reviewed. A quality control check will be performed for each CCTV operator and each operator must exceed 90% accuracy. Throughout the duration of the project, should the Owner discover inaccuracies in data or quality issues with any of the videos, Contractor shall re-inspect those segments at no additional cost to the Owner.

The Owner will provide comments regarding acceptance of the data within 21-days of receiving the data from the Contractor. Neither the CCTV inspections nor the WORK inspected is accepted by the Owner until such time that an acceptance letter is issued by the Owner.

END OF SECTION



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## SECTION 02763

### TELEVISIONING SANITARY SEWER LATERALS

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The Work consists of furnishing all labor, materials, accessories, equipment, tools, transportation, services and technical competence for performing all operations required to execute the internal closed circuit television (CCTV) inspection to inspect service lateral after lateral clean outs have been installed where lateral lining or replacement is indicated on the Contract Drawings.
- B. The CCTV inspection shall show all defects and determine amount of infiltration entering the service laterals.
- C. The CCTV lateral inspection shall be performed by contractor to confirm new laterals are connected to the gravity main and clean before final acceptance.

##### 1.02 GENERAL

- A. After cleaning as specified in Section 02761 "Cleaning Sanitary Sewer Systems" (including special cleaning involving the mechanical removal of roots, grease, and/or tuberculation where authorized), and before and after repair/replacement work, the lateral shall be visually surveyed by means of closed-circuit television. The CCTV inspection shall be performed one (1) lateral at a time.
- B. Post construction survey video shall be delivered to the Owner on DVD or portable hard drive accompanied with the corresponding TV logs for sewer laterals surveyed. The video shall be direct from a live video source into a video file, MPEG or Windows Media File format and of good quality for viewing. The recording of multiple laterals on a single DVD or hard drive is acceptable.

##### 1.03 SOFTWARE

- A. The Contractor shall utilize a NASSCO Pipeline Assessment Certification Program (PACP compliant software to capture the lateral inspections), unless otherwise approved by the Owner.

##### 1.04 EQUIPMENT

- A. The television camera used for the lateral survey shall be one specifically designed and constructed for such survey. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor, and other components of the video system shall be capable of producing a minimum 700-line resolution color video picture. The Contractor shall maintain the camera in clear focus at all times. Picture quality and

definition shall be to the satisfaction of the Owner, and if unsatisfactory, equipment shall be removed and replaced with adequate equipment at no additional cost to the Owner.

- B. The camera used from a cleanout shall be able to be launched from the cleanout and travel down to the sewer mainline up to 100-feet. The camera system shall be able to inspect 3, 4, and 6-inch lateral connections.
- C. The video camera shall include a titling feature capable of displaying on the video the following information:
  - 1. Owner
  - 2. Date/Time
  - 3. Contractor's Name
  - 4. Pipe Size (Diameter) and Material
  - 5. Lateral ID (provided by Owner)
  - 6. On-going Footage Counter

#### 1.05 SHOP DRAWINGS AND SUBMITTALS

- A. Submittals shall be submitted to the Owner/Professional for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300.
- B. The Contractor's submittals shall include description of the software to be used and a sample of the video titles to be used, along with a sample of the television survey log to be used.

#### 1.06 QUALIFICATIONS

- A. Submittals shall be submitted to the Owner/Professional for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300.
- B. The qualifications of the CCTV Contractor shall be submitted and shall include detailed descriptions of the following:
  - 1. Name, business address and telephone number of the CCTV Contractor.
  - 2. Name(s) of all supervisory personnel to be directly involved with this Project.
  - 3. NASSCO PACP certification of on-site operator performing inspections or subject to Owner approval, resume of proposed CCTV operator displaying similar inspection experience.

4. The Contractor shall sign and date the information provided and certify that to the extent of his knowledge, the information is true and accurate, and that the supervisory personnel will be directly involved with and used on this Project. Substitutions of personnel and/or methods will not be allowed without written authorization of the Owner.
5. Specialty technicians shall be certified by the equipment manufacturer and/or its authorized representative. Certifications shall be submitted to the Owner.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. All material supplied shall be one of the products specified in Appendix A as appended to these technical specifications.
- B. All inspection information and data (including video) shall be written to digital media (DVD or portable hard drive).

## PART 3 - EXECUTION

### 3.01 PRE-CONSTRUCTION SURVEY

- A. Procedure
  1. Prior to any lateral repair work, the entire service lateral (from mainline to property line or cleanout, whichever is farther from the mainline) shall be televised.
  2. Measurement for location of defects shall be above ground by means of a meter, roll-a-tape, or other suitable device. Linear footage shall be shown on screen during recording.
  3. Movement of the television camera shall be temporarily halted for a minimum of 10-seconds at each visible defect or point of flow until the source and flow rate from that point are determined.
  4. The inspection shall be performed from either the main sewer or the cleanout with the proper equipment.
- B. Field Documentation
  1. Television CCTV Logs: The Contractor shall obtain lateral identification numbers from the Owner. All inspection logs shall reference the applicable lateral ID. In addition, the upstream manhole number, distance from the upstream manhole, lateral connection to the main line (left, center or right), and address of the customer serviced by the lateral shall be noted on the television survey log.

Inspections shall be recorded in NASSCO PACP/Lateral Assessment Certification Program compliant software unless otherwise approved by the Owner. Reports shall be generated from the software. Printed and electronically stored location records shall be kept by the Contractor and will clearly show the location in relation to the cleanout or the mainline of each infiltration point observed during survey. Footage shall be shown on the log. In addition, other points of significance such as unusual conditions, roots, broken pipe, presence of scale and corrosion, and other discernible features will be recorded and a copy of such records will be supplied to the Owner.

2. Photographs: Digital photographs of the television picture of problems shall be taken by the Contractor upon request of the Owner.
3. Video Recordings: Individual video files shall be created for each lateral inspected. Each file shall be in MPEG or Windows Media video format. Video files shall be named with the lateral ID and date of inspection. Video files shall be submitted on DVD or portable hard drive. The purpose of video recording shall be to supply a visual and audio record of problem areas in the lines which may be replayed. Once recorded, the video shall become the property of the Owner.
4. Audio: All lateral inspection videos shall have an audio record. As a preamble, at the beginning of the inspection, the Contractor shall state the following "(Contractor's Name) is performing a pre/post TV survey of laterals for (each sub area)". State date, time, operator's name, area, pipe size and material, upstream Owner asset manhole number, and depth. The Contractor shall verbally state the position of the lateral with respect to the upstream manhole and describe defects. At the end of each line, state: "end of line and total linear footage".

### 3.02 POST CONSTRUCTION SURVEY

#### A. Procedure

1. After any lateral repair work, the entire service lateral (from mainline to property line or cleanout, whichever is farther from the mainline) shall be televised.
2. The same procedure shall be used as indicated in sub-section "3.01 Preconstruction Survey."
3. In addition, the Contractor shall stop the camera at all point repairs and inspect entire repaired pipe sections.
4. The Contractor shall invert white foreground to black as needed in line sections with light background.
5. In the case of a post liner survey, the Contractor shall fully televise both ends of the liner so that the fit of the liner to the host pipe can be evaluated.
6. The post liner and/or replaced lateral and/or point repaired lateral CCTV inspection shall be done within 2-weeks of installation.

B. Documentation

The same documentation shall be provided as indicated in paragraph 3.01 "Preconstruction Survey" of these specifications.

END OF SECTION

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## SECTION 02764

### TELEVISION EXISTING MANHOLES

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. The Contractor shall perform visual inspections of the existing manholes and record any defect discovered. NASSCO standards shall be followed for all inspections per the requirements herein. The visual inspection shall include surface photo, manhole cover and frame, chimney, walls, invert, and all appurtenances.
- B. The nature of the inspections shall be to verify the physical condition of the manhole and to provide a permanent record of the existing condition as it relates to dimensions, materials, obstructions, breakage, connections, and deterioration. Inspections may be performed by personnel entry or from the surface utilizing pole mounted camera equipment to visually inspect the chimney, cone, wall, bench, pipe seals and invert conditions, and conditions of connecting pipes.

##### 1.02 REQUIREMENTS

- A. The Contractor shall inspect the manhole surroundings and the manhole interior before and after manhole rehabilitation using visual means and a digital camera for documentation.
- B. All inspections shall be recorded.
- C. All inspection forms shall be scanned and submitted as .PDF files.
- D. All inspection data shall be entered into a NASSCO Manhole Assessment Certification Program (MACP) compliant database. The database shall be submitted along with the scanned .PDF files and all digital photographs in .JPG format.
- E. The inspection photographs, report documents, and inspection database shall be in accordance with the Owner's data standards and NASSCO MACP. Where discrepancies exist between MACP and the Owner's standards, the Owner shall be consulted for direction as to which standards shall be used.
- F. Contractor shall maintain a copy of all report materials. The Contractor shall provide comments as necessary to fully describe the existing condition of the manhole on the inspection forms.
- G. Contractor shall be responsible for modifications to equipment and/or inspection procedures to achieve Owner report requirements.
- H. No Work shall commence prior to approval of the submitted materials by the Owner. Once accepted, the report materials shall serve as a standard for the remaining work.



### 1.03 QUALIFICATIONS AND CERTIFICATIONS

- A. Each inspection supervisor shall be NASSCO PACP/MACP certified. Use of PACP/MACP certified technicians to review/document defects in the office (post process) is not acceptable.
- B. The CCTV Contractor must have an internal quality assurance/quality control (QA/QC) program in place and all inspection data shall be subjected to the procedures prior to submittal to the Owner. The Owner will perform QA/QC audits on submitted data.
- C. A QA/QC shall be performed by NASSCO MACP and PACP certified personnel.

### 1.04 SHOP DRAWINGS AND SUBMITTALS

- A. Submittals shall be submitted to the Owner for review and acceptance prior to construction in accordance with the General Conditions and specifications.
- B. The following deliverables shall be submitted at the completion of inspection:
  - 1. Electronic version (.pdf) of the manhole inspection reports.
  - 2. Populated Standard manhole inspection database (.mdb or Excel) saved on CD-R's, DVD, or portable hard drives.
  - 3. Inspection digital photographs in JPEG format saved on CD-Rs, DVD or portable hard drives.
  - 4. QA/QC report.
- C. The above deliverables shall be submitted to the Owner for approval.
- D. The manhole inspection reports, and database shall be in accordance with Owner data standards and NASSCO MACP.

### 1.05 NOTIFICATION

The Contractor shall notify the Owner a minimum of 48-hours prior to performing any inspection work. The Owner may be present during part or all of the inspections. No payment will be made for inspections performed without proper schedule notification.

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. All material supplied shall be one of the products specified in Appendix A as appended to these technical specifications.

## 2.02 DIGITAL CAMERA FOR REMOTE INSPECTIONS

All manhole photographs required as part of this specification shall be obtained using a minimum 2-megapixel digital camera with strobe flash capable of producing digital images with minimum resolution of 640 x 480.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. The inspection crew shall mobilize to the site of the manhole inspection and immediately establish traffic control measures per Florida Department of Transportation (FDOT) standards and specifications and meeting all jurisdictional agencies having authority over the Right-of-Way (ROW) limits, as well as any measures required to protect pedestrians. The crew shall inspect each manhole and record required information.
- B. All manhole structures shall be located. Metal detectors shall be used to locate buried manholes. Once a buried manhole has been located, it shall be marked with paint and/or flagging, if necessary. All pertinent information available shall be recorded including area photo, address, etc. The Owner shall be advised, and the Contractor will be required to excavate or saw cut the existing pavement as necessary to inspect the manhole and perform necessary pavement restoration.

### 3.02 MANDATORY INSPECTION HEADER INFORMATION

- A. Once the manhole is located, the following mandatory information shall be recorded on the inspection form (template is located in the forms section). Note that the mandatory fields noted below are more inclusive than the MACP requirements. All available information shall be collected and recorded for those manholes that are buried, could not open, surcharged, etc.
  - 1. Manhole Number (Asset Number)
  - 2. Sheet number
  - 3. Purchase Order No.
  - 4. Date
  - 5. Time
  - 6. Surveyor's Name
  - 7. Certification Number
  - 8. System owner

9. Locality
10. Drainage area (tributary Pump Station Number)
11. Map number
12. Location (street number and name)
13. Downstream pipe length (feet)
14. Rim to grade (nearest 0.1 foot)
15. Pre-cleaning method (using approved MACP codes)
16. Location code (using approved MACP codes)
17. Manhole surface type (using approved MACP codes)
18. Potential for runoff (using approved MACP codes)
19. Access point type (using approved MACP codes)
20. Inspection status (using approved MACP codes)
21. Area photo image reference (using standard naming convention)
22. Internal photo image reference (using standard naming convention)

### 3.03 MANHOLE COMPONENT OBSERVATIONS

- A. The inspection crew shall complete all fields within the manhole component/ observation section of the inspection form. The following information shall be collected:
  1. Cover type (solid, vented, bolted)
  2. Cover size (top surface diameter in inches)
  3. Cover material
  4. Number of vent holes
  5. Cover/Frame fit (cover to frame fit, MACP codes)
  6. Cover condition (MACP codes)
  7. Cover insert type
  8. Cover insert condition

9. Frame condition
10. Frame seal condition
11. Frame offset distance
12. Frame seal inflow
13. Wall material
14. Interior wall coating
15. Wall diameter
16. Bench present
17. Channel installed
18. Additional remarks relevant to the manhole
19. Any evidence of prior rehabilitation and type of rehab performed

#### 3.04 MANHOLE INTERIOR INSPECTION

- A. The inspection crew shall determine the types of defects within the manhole, document each defect on the manhole form and take a photograph of each defect. The manhole chimney, cone, wall, bench, and channel shall be inspected for structural integrity, signs of I/I and the presence of roots. All documentation shall follow NASSCO MACP standards. Each defect will be documented on the inspection form with the following information:
  1. Defect number.
  2. Component of manhole containing defect.
  3. Defect code (using approved MACP codes).
  4. Image Reference (using approved file naming structure).

#### 3.05 CONNECTING PIPE DETAILS

- A. Each pipe entering and exiting the manhole shall be photographed where possible and inspected to determine diameter, pipe material, debris levels, and rim to invert distance (to 0.1-feet). The pipe inspection will include the following information:
  1. Pipe photo (using approved file naming structure).
  2. Pipe direction (incoming or outgoing).
  3. Pipe clock positions (6:00 position = outgoing).

4. Pipe diameter.
5. Pipe material (using PACP codes).
6. Rim to invert distance (measured to nearest 1/10th of a foot).
7. Pipe special condition (drops, force mains, etc. using approved MACP codes).
8. Debris depth.
9. Connecting structure number; if manhole or cleanout, service line clock position, stubout clock position, etc.
10. Pipe seal condition (using approved MACP codes).
11. Pipe seal roots (using approved MACP codes).
12. Observed pipe defects, obstructions, roots, etc. (using PACP codes).

### 3.06 MANHOLE SKETCH, MAP UPDATE, AND NOTES

- A. The inspection crew shall complete the manhole plan view sketch noting all connecting pipes. Any special observations or notes may be added to the profile sketch on the field form.
- B. Influent and effluent lines in each manhole shall be compared to the existing map and corrections noted in the sketch section of the field form.

### 3.07 NOTIFICATION OF EMERGENCY CONDITIONS

Inspection crews shall immediately notify the Owner and/or on-site inspector of any defects posing imminent danger to the public (missing lids, covers broken during inspection, sink holes, etc.) and any observed pipe blockages or potential overflow conditions.

### 3.08 COMPLETION

- A. Once the inspection is complete the field crew shall make certain the ring is clean and does not have any debris preventing a proper cover fit. The manhole lid shall be replaced, and any displaced items moved back into place.
- B. A list of manholes that could not be fully inspected, along with the problem explanation, shall be forwarded to the Owner weekly throughout the inspection work.
- C. The Contractor should perform their due diligence prior to work efforts such that remobilization efforts are not required for inspection purposes. There will be no additional compensation for remobilizations to manholes.
- D. Any map updates shall be consolidated and forwarded to the Owner with the submitted inspections.

### 3.09 PHOTOGRAPH REQUIREMENTS

- A. During each inspection the following series of photographs shall be taken:
1. Area Photograph: During the inspection, a photograph shall be taken of the manhole cover showing location within the roadway, shoulder, or easement as appropriate. Photographs shall be taken of any indications of previous overflows such as watermarks and paper or other debris typical of sewer overflows. Surface photographs shall be oriented in the direction of the outgoing pipe to show the pipeline cover and easement condition. The area photographs should show the manhole visible in the foreground where possible. A minimum of 1 area photo is required.
  2. Internal Photograph: Take a photograph of the manhole interior in plan view showing the general arrangement of the incoming and outgoing sewers, manhole walls, and other appurtenances. The internal condition photograph shall be oriented with the direction of the outgoing main line flow at the bottom of the photograph (6:00 position). A minimum of 1 internal photograph is required.
  3. Manhole Defect Photographs: During manhole inspections digital photographs shall be taken of all defects. Photographs must clearly and accurately show each defect and correspond to defects and photo numbers logged on the manhole inspection form. A minimum of 1 photo for each observed defect is required.
  4. Connecting Pipe Photographs: The camera should then be pointed into all incoming and outgoing pipes where possible to capture general conditions within the pipes. Any obvious blockages or defects should be noted using PACP defect codes. A minimum of 1 photo of each incoming or outgoing pipe is required.
- B. During inspections manholes shall be free of steam, fog, water vapor, or other conditions that will impact the quality of photographs.
- C. All photographs shall adequately capture the manhole conditions and details of defects. Lighting and camera quality shall provide a clear, in-focus picture of the manhole interior, manhole defects, and manhole. The lighting shall provide uniform light free from shadows or hot spots.
- D. If larger than 640 x 480 resolution, then photo will be converted to 640 x 480. Photos less than 640 x 480 are not acceptable and converting upward to 640 x 480 is not acceptable. All photographs shall be resized to 640 x 480 resolution to minimize file size.
- E. The images shall be kept electronically, copied to a CD, DVD, or external hard drive, and submitted with the inspection forms per paragraph 3.06. Photographs shall be named according to the photograph naming conventions included herein.
- F. All digital photographs shall be referenced on the manhole inspection form and electronic spreadsheet/database.
- G. All digital photographs shall be renamed in accordance with the following photo file naming convention:

1. Area Photo = Manhole ID, A, Photo Number, jpg  
Example: 3965002A0001.jpg  
Manhole: 39650002  
A=Area Photo  
Photo No.0001
2. Internal Photo = Manhole ID, I, Photo Number, jpg  
Example: 3965002I0001.jpg  
Manhole: 3965002  
I=Internal Photo  
Photo No.0001  
(Note: Photo oriented with the outgoing pipe on the bottom)
3. Manhole Defect Photo = Manhole ID, M, Photo Number, jpg  
Example: 3965002M0015  
Manhole: 3965002  
M=Manhole Defect Photo  
Photo No. 0015
4. Pipe Photo = Manhole ID, P, Photo Number, jpg  
Example: 3965002P0002.jpg  
Manhole: 3965002  
P=Pipe Photo  
Photo No. 0002

### 3.10 MANHOLE NUMBERING, INSPECTION FORMS AND DEFECT CODES

The Contractor shall use the Owner's manhole numbering system when performing the inspections for this Project. Manhole numbers will be provided by the Owner if not already provided on the plans. Defect codes shall conform to those specified in the NASSCO MACP specification. Standard manhole defect codes (a subset of MACP) are included along with a standard manhole inspection form at the end of this specification.

### 3.11 SITE RESTORATION

After inspecting manholes in an area, the work site shall be cleaned and restored to pre-Work conditions. If any existing manholes are buried and subsequently exposed, then restore the site to equal or better condition.

### 3.12 DELIVERABLES

The Contractor will be required to submit the following deliverables at the completion of inspection.

A. Scanned Field Inspection Reports to include:

1. Inspection session header information (see required fields above)
2. Component observations
3. Manhole inspection details including defects observed and photo image references
4. Connecting pipe details
5. Manhole plan view sketch
6. Format:

Adobe Acrobat PDF files: 1 report PDF per manhole

File name: <MH ID> <Date (year\_mo\_day format)>.PDF

Example: 30060002\_2010\_02\_16.pdf

- B. Inspection digital photograph in Owner approved format and resolution, and assigned file names in accordance with the Owner standard.
- C. Electronic Inspection Data stored and exported in Owner approved NASSCO Manhole Assessment and Certification Program (MACP) compliant Microsoft Access database (.MDB) version 4.4, or Excel file delivered on DVD or portable hard drive.
- D. Marked up field maps detailing map corrections and/or discrepancies noted during inspection.
- E. All digital files shall be submitted on DVD or portable hard drive, labeled as follows:
1. DVD/Hard drive Labels: Typed labels shall be attached to the face of each DVD. The typed index labels shall include the following information:
    - a. Content (Manhole Inspections)
    - b. Contractor name



- c. Date and Purpose of Survey (CIP R/R)
- d. Tributary Pump station number
- e. Manholes included (listing of manholes using standard Asset Numbers)
- f. Contract Number / Delivery Order Number (if applicable)
- g. QA/QC report including listing of manhole inspections reviewed and results.

END OF SECTION

## SECTION 02774

### WASTEWATER GRAVITY COLLECTION SYSTEM

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: Construction of sanitary sewers, sewer connections and appurtenances as shown on the Drawings or specified herein.
- B. These Specifications shall govern the design, materials and installation requirements for gravity sanitary sewer systems constructed within the City of Hollywood's service area when using Poly Vinyl Chloride (PVC) pipe and fittings. 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.
- D. All SRF funding requirements must be met for all submittals.

##### 1.02 QUALITY ASSURANCE

- A. Storage: PVC pipe shall be stored on level ground, preferably turf or sand, free of sharp objects which could damage the pipe. Stacking of the PVC pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes. Where necessary, due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.
- B. Tests: Certified records of tests made by the manufacturer or by a reliable commercial laboratory shall be submitted with each shipment of pipe. All pipe shall be inspected upon delivery and that which does not conform to the requirements of these specifications shall be rejected and must be immediately removed by the Contractor. The Contractor shall furnish and provide samples of pipe for the performance of such additional tests as the City may deem necessary. Contractor shall notify the City of Hollywood, Engineer, and any other local, state or federal agencies having jurisdiction at least 48 hours prior to arrange the required inspection of the gravity sewer system.
- C. All material and installation shall be in accordance with the City of Hollywood Department of Public Utilities Specifications and Standard Details.
- D. The material and installation for this project shall be in full compliance with all applicable standards listed in Section 01070, Applicable Standards and Codes.

- E. Survey Data: Base all elevations on North American Vertical Datum of 1988 (NAVD).

#### 1.03 SHOP DRAWINGS AND SUBMITTALS

- A. Submittals shall be submitted to the City for review and acceptance prior to construction in accordance with the General Conditions and specifications See submittals section.

1. Precast manholes.
2. Manhole frames, covers, and other castings.
3. Manufacturer's certified test report on castings.
4. Certification of admix installation from pre-caster.
5. Certified test records for polyvinyl chloride pipe.
6. Mill Test Certificates on ductile iron pipe.
7. Manhole pipe connections.
8. Coal tar epoxy.
9. Special interior linings.

Note: SRF requirements must be followed.

- B. Record Information: The Contractor shall submit to the City the elevations of the center of the manhole covers and inverts of all pipes in the manholes.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. All material supplied shall be one of the products specified in the "List of Approved Products" appended to these technical specifications as an appendix.

#### 2.02 MATERIALS

- A. Ductile Iron Pipe and Fittings: Ductile iron pipe and fittings shall meet the requirements of Section 15060 Piping and Fittings. Ductile iron piping and Fittings in the wastewater system is only acceptable on a case-by-case basis and will prior approval by the City and Engineer.
- B. Polyvinyl Chloride Pipe and Fittings: Polyvinyl Chloride (PVC) Pipe shall meet the requirements of Section 15060 - Piping and Fittings.

C. Precast Concrete Manholes

1. Precast manholes shall conform to the requirements of ASTM Designation C 478.
  - a. The minimum wall thickness shall be 8-inches.
  - b. Lifting holes through the structures are not permitted.
  - c. The design of the structure shall include a precast base of not less than 8-inches in thickness poured monolithically with the bottom section of the manhole walls.
  - d. Where drop structures are required, the design of the structure shall include a precast base, for the drop structure, of not less than 8-inches in thickness poured monolithically with the bottom section of the manhole walls.
  - e. New manholes shall contain a crystalline waterproofing concrete admix. Crystalline waterproofing concrete admix shall be added to the concrete during the batching operation. Admix concentration shall be added based upon manufacturer design percent concentration of admixture to the required weight of cement. The amount of cement shall remain the same and not be reduced. A colorant shall be added to verify the admix was added to the concrete for all precast manholes. Colorant shall be added and provided at the admix manufacturing facility, not at the concrete batch plant. Contractor shall provide certification from the pre-caster that the admix was installed in accordance with the manufacturer's recommendations. Admixture to be manufactured by Xypex or Conshield.
  - f. Existing manholes shall be coated with Sewpercoat, Calcium Aluminate Aggregate Mortar.
2. Top sections shall be eccentric, except that concrete top slab shall be used where shallow cover requires a top section less than 3-feet deep.

D. Concrete and Reinforcing Steel: Concrete and reinforcing steel shall conform to the requirements of Division 3 - Concrete. Concrete classes for the various purposes shall be as follows:

1. Manhole bottoms, Class A
2. Precast manholes, Class A (4,000-psi)
3. Pipe and riser encasement, Class C
4. Protective slabs, Class C

- E. Castings: Gray iron castings for manhole frames, covers, adjustment rings, and other items shall conform to the ASTM Designation A 48, Class 30. Castings shall be true to pattern in form and dimensions and free of pouring faults and other defects in positions which would impair their strength, or otherwise make them unfit for the service intended. No plugging or filling will be allowed. Lifting or "pick" holes shall be provided but shall not penetrate the cover. Casting patterns shall conform to those shown or indicated on the Drawings. The words SANITARY SEWER and CITY OF HOLLYWOOD, FLORIDA shall be cast in all manhole covers as shown on the Drawings. All manhole frames and covers shall be traffic bearing to meet AASHTO H-20 loadings unless otherwise specified. Castings shall be delivered unpainted with a shot-blasted finish. All SRF funding requirements for American Iron and Steel must be met for all submitted items.
- F. Air Release Valve Manhole Frames and Covers: Air release valve (ARV) manhole covers and frames shall be U.S.F. Type 1341 ring with AG-M cover as manufactured by U.S. Foundry, Inc., 8351 NW 93rd Street, Medley, Florida 33166, or approved equal. The smaller cover shall have two adjustable Camlocks for securing it to the larger cover, and four 1-inch diameter vent holes to prevent uplift during sudden bursts of air. The covers shall be cast labeled "AIR RELEASE"
- G. Clean-outs shall have brass, threaded plugs on 6-inch risers or CISP clean-out extensions set flush with surrounding grade. If the cleanout is within an unpaved area, it shall be set on a 18"x18"x4" thick square concrete collar reinforced with a continuous #3 bar. All cleanouts in paved or traffic areas are to be H20 loaded
- H. Brick: Brick for manhole construction shall be dense, hard burned, shale, or clay brick conforming to ASTM Designation C 32, Grade MM or C 62, Grade MW, except that brick absorption shall be between 5 and 25-grams of water absorbed in 1-minute by dried brick, set flat face down, in 1/8-inch of water.
- I. Cement Mortar: Cement mortar for manhole construction shall comply with ASTM Designation C 270, Type M, except that the cement shall be Portland Type II only. No mortars that have stood for more than 1-hour shall be used.
- J. Pipe Adapter: Connection of PVC gravity sewer lines to precast manholes and wetwells shall be made by using a flexible boot type manhole coupling adapter.
- K. Interior Linings (existing structures): Interior surfaces of existing manholes and wetwells shall be coated or lined to resist corrosion where shown on the Drawings. Coatings and linings shall meet the requirements of Section 09901 Coatings and Linings.
- L. Interior Linings (proposed structures): Interior surfaces of new wetwells shall be lined. Interior surfaces of new manholes shall be lined where shown on the Drawings. Coatings and linings shall meet the requirements of Section 09901 Coatings and Linings.
- M. Joint Sealer: Joint sealer material for precast manhole structures shall be pre-formed flexible plastic conforming to Federal Specification SS-S-00210 (GSA-FSS). Seal all exterior joints with Portland Type II cement after setting of joint sealer and placement of manhole section to form a watertight joint.

- N. Non-Shrink Mortar: Non-shrink mortar shall be used for filling annular spaces and holes in precast manholes and wetwells.
- O. Embedment Material: Embedment material for bedding, haunching and initial backfill shall conform to the requirements of Section 02222, Excavation and Backfill for Utilities and Structures.
- P. Sanitary Sewer Pipe and Fittings:
1. General:  
  
All piping for use in gravity sewer systems shall SDR 26 PVC as shown on the plans or called out elsewhere herein. For further information on these types of pipe, refer to Section 15060, Piping and Fittings. All gravity sewer piping includes, but is not limited to, gravity sewer mains, sanitary laterals, all fittings, etc. All gravity sewer piping must be installed properly or removed and replaced. No gaps are allowable at pipe joints.
- Q. Manhole Encapsulation: Manhole cones, riser rings, iron frame, cover, and all joints shall be encapsulated externally with a heat shrink-wrap with a minimum thickness of 98-mils (2.5-mm).
1. Wrap shall have a cross-linked polyolefin backing coated with a protective heat activated adhesive. The wrap shall effectively bond to the substrate via primer provided by the manufacturer. The wrap shall be applied with a high intensity propane torch.
  2. Heat shrink-wrap for all barrel section joints of manholes shall be a minimum 9-inch width. Corbel section, riser rings, and ring and cover shall have a minimum 12-inch width wrap.
  3. Adhesive tap materials shall not be allowed.
- R. Pipe Couplings: Pipe couplings used to join two pieces of plain end pipe shall be sized to suit the outside diameter of the pipe ends to be jointed. Transition couplings shall be used to join pipes of different outside diameters. All pipe couplings shall be rigid connections.
1. Connections from new gravity sewer pipes to existing pipes shall be made with mechanical coupling as approved by the Engineer.
  2. Connections from new force mains to existing force mains shall meet the following requirements: All carbon steel parts of the coupling shall be coated on the interior and exterior with a fusion bonded thermosetting epoxy coating with a 12-mil nominal coating thickness. The coating shall be equal to AL-CLAD as manufactured by Dresser Industries, Inc. Gaskets for the coupling shall be wedge type manufactured of Buna-N resilient rubber. Bolts shall be manufactured of high strength Type 316 stainless steel with Type 316 stainless steel hexagonal nuts. Bolts and nuts shall conform dimensionally to

ANSI/AWWA C111, latest revision. Couplings shall be Style 38 as manufactured by Dresser Industries, Inc. or an equal approved by the City and Engineer.

3. Repairs to new gravity sewers shall be performed per the details provided in the drawings and shall utilize two double bell rubber gasket by gasket couplings.

### PART 3 - EXECUTION

#### 3.01 PREPARATION

- A. Upon satisfactory excavation of the pipe trench, as specified in Section 02220 "Excavating, Backfilling and Compacting" a continuous trough for the pipe barrel and recesses for the pipe bells shall be excavated by hand digging so that, when the pipe is laid in the trench, true to line and grade, the pipe barrel will receive continuous uniform support and the bell will receive no pressure from the trench bottom.
- B. The interior of all pipe shall be thoroughly cleaned of all foreign material before being lowered in the trench and shall be kept clean during laying operations by means of plugs or other approved methods.
- C. Existing Utilities
  1. The Contractor is to locate all existing utilities prior to commencement of construction. It is critical to locate ducts and other utility crossings and potential conflicts and to ensure that the gravity sewer slope and construction can be maintained. Provide temporary support, adequate protection and maintenance of all underground and surface utility structures, drains, sewers, and other obstructions encountered in the progress of the work.
  2. Permanently support, relocate, remove, or reconstruct existing utility structures (such as conduits, ducts, pipe branch connections to main sewers, main drains or other structures) where the grade or alignment of the pipe is obstructed. Coordination with all utility providers and advanced notification/approvals for any relocations will be required by the Contractor. Deviations from the required line or grade are not permitted.
  3. Contact Sunshine 811 prior to excavating and verify existing utility field locations at least 48 hours prior to beginning any excavation.
  4. Verify the size, location, elevation, and material of all existing utilities within the area of construction.

The Contractor will not be allowed any delay claims or any additional compensation due to lack of locating of existing utilities in advance of construction and is required to ensure that they perform subsurface utility excavation or other measures to identify existing utilities in advance of the work.

### 3.02 INSTALLATION

#### A. Sewer Pipe

##### 1. General

- a. Laying of pipe shall proceed upgrade with spigot ends pointing in the direction of flow. Before pipe is joined, gaskets shall be cleaned of all dirt, stones, and other foreign material. The spigot ends of the pipe and/or pipe gaskets shall be lubricated lightly with a lubricant as specified by the pipe manufacturer and approved by the City. Sufficient pressure shall be applied to the pipe so as to properly seat the socket into the bell of the pipe. Any damage to the pipe due to over-exertion shall be replaced at the Contractor's expense. All pipe shall be laid straight, true to the lines and grades shown on the Drawings.
- b. Variance from established line and grade, at any point along the length of the pipe, shall not be greater than 1/32-inch per inch of pipe diameter and not to exceed 1/2-inch, provided that any such variation does not result in a level or reverse sloping invert.
- c. Any pipe, which is disturbed or found to be defective after installation, shall be taken up and relayed or replaced at the Contractor's expense.
- d. Approved utility crossing signs shall be placed on the pipe alignment at each side of any waterway crossing.
- e. All slopes shall meet the following criteria:

Nominal Sewer Size	Min. Design Slope (Ft. /100 Ft.)	Min. Constructed Slope (Ft./100 Ft.)
8-inch	0.40	0.40
10-inch	0.30	0.28
12-inch	0.24	0.22
15-inch	0.15	0.13

Source: Based on 10 States Standards and adjusted City of Hollywood standards.

##### 2. PVC Pipe

- a. Handling PVC pipe: The handling of PVC pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Sections of pipe with deep cuts and gouges shall be removed and discarded at no expense to the City.



- b. Lowering pipe into trench: Care shall be exercised when lowering pipe into the trench to prevent damage to or twisting of the pipe.

3. Building Laterals/Service Connections

- a. All piping and fittings to be SDR 26 PVC.
- b. Service connections shall be constructed in accordance with the details as indicated on the Drawings.
- c. Sewer lateral pipe shall be extended to the right-of-way and plugged at the right-of-way line to avoid leakage (unless otherwise indicated on the Drawings). All connections and changes of direction shall be made using standard fittings designed for that purpose.
- d. Locator balls shall be placed under all sanitary sewer service cleanouts.
- e. On curbed streets, the exact location for each service connection shall be marked by etching or cutting an "S" in the concrete curb. Where no curb exists or is planned, locations shall be marked by a method approved by the City.

4. PVC C-900 DR 14 Pipe Section: PVC C-900 DR 14 pipe shall be substituted for the specified PVC pipe where:

- a. The sewer or service pipe is to be constructed with less than 30-inches of cover between the top of the pipe and the final top of pavement or ground line.
- b. The PVC sewer main crosses over a water main or is at a depth which results in less than 18-inches clear distance between pipes when crossing under a water main. The DR 14 pipe shall extend a minimum of 10-feet on each side of the point of crossing.
- c. The lateral separation of the sewer pipe and potable water piping is less than 10-feet.

B. Manholes:

- 1. Manhole excavation and bedding at manhole junctions shall be performed in accordance with the provisions of Section 02220 "Excavating, Backfilling and Compacting" of these specifications.
- 2. The invert channels shall be smooth and accurately shaped to a semicircular bottom conforming to the inside of the adjacent sewer section using 2,500-psi concrete. Steep slopes outside the invert channels shall be avoided. Changes in size and grade shall be made gradually and evenly. Changes in the direction of the sewer or entering branch shall be a smooth curve with radius as long as practicable. Invert channels shall also be formed for pipe stubouts. Channels

that are improperly installed: Not smooth, not conveying wastewater flow adequately in the discharge direction, etc. shall be removed and replaced at no additional cost to the City.

3. The first pipe joint outside the manhole shall be located a minimum distance of 24-inches from the outside surface of the manhole. No gaps will be acceptable at pipe joints.
  4. Precast manhole tops shall terminate at such elevations to permit laying brick courses (minimum 3 courses to 4 courses maximum) or providing HDPE adjustment rings (minimum 5-inches to 10-inches maximum) under the manhole frame to make allowance for future street grade adjustments. The manhole top should be flush with final grade elevations to eliminate the potential of infiltration. In addition, the manhole top shall not exceed final grade elevations.
  5. Frames and covers shall be set accurately to conform to the finished grade.
  6. Outside drop connections shall be made in accordance with the details shown on the Drawings.
  7. Drop connection base slab extensions on precast manholes shall be manufactured monolithically with the manhole elements at the casting yard. The manufacturer shall submit for approval the method of drop manhole construction.
  8. Where additional pipe connections or modifications of existing factory-made openings are required on new or existing precast concrete manholes or wetwells, all cutting relative thereto shall be performed only by a power-driven abrasive wheel or saw. It is specifically noted that such connections to existing manholes or wetwells shall be installed in accordance with the details for new units shown on the Drawings and shall be caulked watertight with non-shrink grout.
  9. Connection of the pipe entering the manhole shall be made by using a flexible boot type manhole coupling adapter. At the entry into the manhole, no part of the horizontal pipe shall rest against the concrete. No piping should be offset from the coupling into the manholes. A straight piping alignment is required.
  10. Manholes shall be completed as the work progresses so that testing may be conducted as prescribed in paragraph 3.03 Field Quality Control.
- C. Concrete encasement: Class C concrete encasement shall be constructed in accordance with details shown on the Drawings.
1. The City may order the line encased when:

- a. The sewer main crosses over a water main or is at a depth which results in less than 18-inches clear distance between pipes when crossing under a water main. **Encasement** shall extend a minimum of 10-feet on each side of the point of crossing. In lieu of encasement, the sewer line may be constructed of PVC DR 14 pipe and shall be laid such that both joints will be a distance of 10-feet from the crossing.
  - b. The maximum width for trench excavations is exceeded. The Contractor shall construct concrete encasement around the pipe for the length of the excessive excavation. No payment will be made for the concrete encasement required due to excessive trench widths.
- 2. The points of beginning and ending of pipe encasement shall be not more than 6-inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.
- D. Concrete protective slabs: Concrete protective slabs as shown on the Drawings shall be constructed over gravity sewers that have less than 3-feet of cover from finished grade.
- E. Connections to existing structures: Proposed sewer lines shall be connected to the existing manholes by core drilling the proper size opening and installing a flexible boot type manhole adapter as specified in paragraph 2.01.H of this Section.
- F. Invert channels (benching) shall be provided for all new manholes and existing manholes which are connected into. No brick shall be allowed in construction of the manhole invert. Inverts shall be poured using 2,500-psi concrete.

### 3.03 FIELD QUALITY CONTROL

- A. Workmanship: Sewers and appurtenances shall be built watertight. The sewage must be pumped for disposal and special care and attention must be paid to securing watertight construction. Upon completion, the sewers, or sections thereof, will be tested and gauged and if leakage is above the allowable limits specified, the sewer will be rejected.
- B. Inspection: On completion of each block or section of sewer, or such other times as the City may direct, the block or section of sewer shall be cleaned, tested, and inspected.
  - 1. During the lamping inspection, each section of the sewer pipe shall show, on examination from either end, a full circle of light between manholes.
  - 2. Each manhole or other appurtenance to the system shall be of the specified size and form, be watertight (no leakage allowed by visual inspection), and be constructed with the top set permanently to specified position and grade. All repairs shown necessary by the inspection shall be made; broken or cracked pipe replaced; all deposits removed, and the sewer left true to line and grade, entirely clean and ready for use.

3. No pipe shall exceed a deflection of 5%. After the final backfill has been in place at least 30-days, the Contractor shall perform deflection testing using a rigid ball or mandrel with a diameter of not less than 95% of the base inside diameter or average inside diameter of the pipe, depending which is specified in the ASTM standard to which the pipe is manufactured. If the mandrel does not pass the completed section of sewer, the entire section of sewer will be rejected.

C. Mandatory Closed-Circuit Television (CCTV) Inspections:

The following is required in the event of an unsuccessful lamping test:

1. Also see specification sections 02762, 02763 and 02764.
2. Pre-CCTV Inspection: Prior to the work being started, internal gravity sewer video inspection must be performed on all existing gravity sewer system piping and laterals by the Contractor to check for alignment, deflections and other potential issues. The television inspection shall also be used to check for cracked, broken, or otherwise defective pipe and overall pipe integrity. CCTV Inspection is to be completed on the existing gravity sewer systems along S. 56<sup>th</sup> Avenue between Plunkett Street and Washington Street and including the perpendicular systems on Dawson Street and Rodman Street.
3. Post-CCTV Inspection: All newly installed gravity sewer piping and laterals require post-CCTV inspections. The post-CCTV video internal inspection will be performed in 2 stages. The first inspection shall be within 30-days after the installation of the gravity sewer pipe provided the road base is in place and the manhole rings and covers are to grade. The second post-CCTV inspection of the gravity sewer pipe shall be before the end of the 1-year warranty period. Timely reports must be provided to the City for review and approvals.
4. The maximum vertical sag acceptable is 5% of pipe diameter.
5. The Contractor shall be required to repair or replace the pipeline from manhole to manhole, if more than two couplings need to be use for correction.
6. Prior to repair or replacement of failed sewer pipe, the method of repair or replacement shall be submitted to the City for approval. Pressure grouting of pipe or manholes shall not be considered as an acceptable method of repair.

D. Low Pressure Air Exfiltration Testing:

1. The Contractor shall provide all labor, equipment, and materials and shall conduct all testing required under the direction of the City.
2. Low pressure air testing shall conform to the requirements of UNI-B6-79 "Recommend Practice for Low-Pressure Air Testing of Installed Sewer Pipe", as published by UNI-Bell Plastic Pipe Association.

3. During sewer Construction, all service laterals, stubs, and fittings into the sewer test section shall be properly capped or plugged so as not to allow for air loss that could cause an erroneous air test result. Where necessary, the Contractor shall restrain caps, plugs, or short pipe lengths such that blowouts are prevented.
4. Each test section shall not exceed 350-feet in length and shall be tested between adjacent manholes.
5. Before testing, Contractor shall install monitoring wells at each manhole to determine groundwater level and adjust test pressure accordingly. In no case shall the test pressure exceed 9.0-psig. All pressurizing equipment shall include a regulator or relief valve set no higher than 9.0-psig to avoid over-pressurizing.
6. Low-pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0-psig greater than the average backpressure of any groundwater above the invert of the pipe, but not greater than 9.0-psig.
7. When temperatures have been equalized and pressure stabilized at 4.0-psig greater than the average groundwater backpressure, the air hose from the control panel to the air supply shall be shut off or disconnected. The continuous monitoring pressure gauge shall then be observed while the pressure is decreased to no less than 3.5-psig greater than the average groundwater backpressure. At a reading of 3.5-psig greater than the average groundwater backpressure, timing shall commence with a stopwatch or other timing device that is at least 99.8% accurate.
8. If the time shown in **Table 02774-1**, for the designated pipe size and length, elapses before the air pressure drops 1-psig; the section under-going test shall have passed. The test may be discontinued once the prescribed time has elapsed.
9. If the pressure drops 1-psig before the appropriate time shown in the table has elapsed, the air loss rate shall be considered excessive and the section of pipe has failed the test.
10. Should the section fail to meet test requirements, the Contractor shall determine the source or sources of leakage and make all necessary repairs and shall repeat the test until the test section is within established limits. All corrective work shall be at the Contractor's expense.

E. Correction of Non-Conforming Work:

1. **All non-conforming work shall be repaired or replaced by the Contractor within thirty calendar (30) days of being notified of deficiencies at no additional expense to the City. The work may also include additional dewatering, MOT, permitting, approvals and fees, etc., which shall also be at no additional expense to the City for rectifying deficiencies. Non-conforming work shall be defined as failure to adhere to any specified or implied directive**

**of these technical special provisions and/or the Drawings, including but not limited to pipe not laid straight, piping not in a straight alignment between manholes, piping not true to the lines and grades as shown on the Drawings, damaged or unacceptable materials, misalignment or diameter ring deflection in pipe due to bedding or backfilling, piping not maintaining minimum slopes, no sags or sagging piping, no offsets of piping into manholes or manhole boots/connections, water standing in any pipe segment or structure, visible or detectable leakage, and failure to pass any specified test or inspection.**

**F. Temporary Drainage During Construction:**

1. Construct and maintain temporary drainage facilities, which may be required to provide drainage relief for the new construction without causing abnormal or adverse flooding impacts to the existing or new facilities.
2. Temporary facilities may include swales, pipe, etc. as necessary.

**G. Restoration of Surfaces and Structures:**

1. Restore and replace paving, curbing, sidewalks, fences, sod, survey points, or other disturbed surfaces or structures to a condition equal to that before the work was begun.
2. Restoration of surfaces and structures outside the Owner's property line: Comply with requirements of the applicable governing agencies.

**H. Cleaning up:**

1. Remove surplus pipeline material, tools, temporary structures, etc.
2. Dispose of all dirt, rubbish, and excess earth off site.

**Table 02774-1  
Test Time Table**

TEST TIME: For sewer diameter between 8 inches and 36 inches inclusive, the pipe shall be tested between adjacent manholes. The test time for the air pressure to drop the specified one pound shall be as listed below:											
SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP											
1 Pipe Dia. (in.)	2 Minimum Time (min:sec)	3 Length for Minimum Time (ft)	4 Time for Longer Length (sec)	Feet							
				100	150	200	250	300	350	400	450
6	5:40	398	0.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.148 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	35:37	53:26	71:13	89:02	106:50	124:38	142:26	160:15
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46

END OF SECTION

## SECTION 02900

### 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.

##### 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 "DOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. The DOT 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 acceptance 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. Mulch shall not be placed within 6 inches of tree trunks.

### 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. The CONTRACTOR shall re-grade the work areas disturbed by his construction activities to the existing grade prior to commencement of construction.
- B. Sodding shall be as required by Specification Section 02930, "Sodding".

### 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: When setting plants in holes the CONTRACTOR shall make sure that, when lowered into the hole, the plant shall:
  - 1. Rest on a prepared hole bottom such that the roots are level with, or slightly above, the level of their previous growth
  - 2. Be oriented such as to present the best appearance.
  - 3. Make allowances for any anticipated settling of plants.
- 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.
  - 2. 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.
  - 3. 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.

4. 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.
5. 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 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. 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.
- B. 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.
- C. 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.
- D. 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.

- E. 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.
- F. 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.
- G. 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 top soil bed have been thoroughly moistened.
- H. 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

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## **DIVISION 3**

## **CONCRETE**





## SECTION 03051

### LEAKAGE TESTING OF HYDRAULIC STRUCTURES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section describes the method of testing concrete hydraulic structures for leakage.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete: Section 03300.
- B. Concrete Finishing and Curing: Section 03350.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Provide water, piping, and equipment to test concrete structures for leakage.

#### PART 3 - EXECUTION

##### 3.01 GENERAL

- A. Hydrostatically test reinforced concrete structures which will contain water to determine that they conform to "Leakage Test Procedure" herein and are free of detectable leaks. Do not hydrostatically test walls which are to be restrained or laterally supported by slabs until slab concrete has obtained the specified compressive strength.
- B. Prior to testing, clean exposed surfaces by thoroughly hosing and removing surface laitance and loose matter from walls and slabs. Remove wash water and debris from the structures by means other than washing through plant piping.
- C. No backfilling, floor finish, concrete or mortar fill, wall insulation, gas proofing or protective coatings, or permanent pipe connections shall be applied to or installed in any new water containment structures until they have been subjected to loading for settlement and tested for leakage. Testing shall not be done until the concrete has reached its 28-day design strength.

##### 3.02 LEAKAGE TEST PROCEDURE

- A. During the test period, the excavation around the structure shall be kept dewatered by the Contractor. The Contractor shall temporarily close all bottom openings and wall openings below maximum water level in the structures; furnish and fill the structures to the design maximum water level with clean water and let it stand for 24-hours before

testing. The Contractor shall make his own arrangements for handling the water for testing and its transfer from one structure to another and its final disposal. After 24-hours the Contractor shall take all necessary elevations and measurements prior to testing of the structures.

- B. For the Preloading Test the Contractor shall maintain the liquid level in the structures at the design maximum water level for 72-hours. If the characteristics of settlement of the structure so require, the loading shall continue for a longer period to permit the necessary consolidation of the foundation material, in which case the Contractor shall be entitled to no extra compensation, but a commensurate extension of time for completion of the whole work under this contract shall be allowed.
- C. Leakage testing shall not be started until all tank walls, floors and top slabs have been placed and the concrete has attained design strength.
- D. Leakage testing shall be carried out in accordance with ACI 350.1 - Tightness Testing of Environmental Engineering Concrete Structures. The test criterion shall be HST-NML (no measurable loss) as defined by ACI 350.1.
- E. During the leakage test period, the Engineer shall inspect the structure for leakage. If moist spots become visible, indicating the existence of minor leaks, or if the water level indicates hidden leakage, the Contractor shall furnish all materials and do all work necessary to locate the leaks and make the structure watertight to the complete satisfaction of the Engineer. This includes the repair of cracks, tie holes, etc. No additional compensation shall be allowed for such work.
- F. If, in the opinion of the Engineer, during the course of the test weather conditions are such that it becomes difficult to accurately monitor the water level in the tank, the test shall be stopped, and started over again when weather permits.
- G. On conclusion of the test, the Contractor shall pump or drain the water from the structure and dispose of it without injury to structures or surfaces.

### 3.03 REPAIR METHODS

- A. Methods for repairing concrete not passing the leakage test shall be as described in Section 03350.

END OF SECTION

## SECTION 03111

### CONCRETE FORMWORK

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section describes materials and installation of concrete forms.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Submittals: Section 01300.
- B. Divisions 2 and 3

##### 1.03 SUBMITTALS

- A. Submit shop drawings in accordance with the General Conditions and Section 01300.
- B. Submit manufacturer's literature for form ties, spreaders, corner formers, form coatings, and bond breakers.

#### PART 2 - MATERIALS

##### 2.01 FORM CONSTRUCTION AND DESIGN

- A. Design formwork in conformance with methodology of ACI 347R for anticipated loads, lateral pressures, depth of concrete placement and rate of concrete placement.
- B. Locate bracing and shoring to maintain form stability and comply with finish tolerances specified.
- C. Provide temporary openings in wall and column forms to facilitate cleaning, inspection and concrete placement.
- D. 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.
- E. Construct forms with regard for construction and expansion joint locations and architectural lines.
- F. Use panels as large as practical to minimize form seam lines.

- G. 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.
- H. 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.
- I. Notify the Owner's Representative prior to concrete placement (48 hours minimum).
- J. Steel forms shall be minimum 24 gauge, with tongue-and-groove joints, complete with steel stakes and splice plates.
- K. Provide material for forms that is not reactive with concrete. Formwork of aluminum is not acceptable.
- L. Expandable metal mesh shall not be used in formwork.

## 2.02 CLASSES OF FORMS

- A. 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.
- B. 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.
- C. 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.

## 2.03 FORM MATERIAL

- A. Use plywood, lumber, and steel of sufficient strength and surface smoothness to produce the specified finish.
- B. 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.
- C. 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.

## 2.04 FORM TIES

- A. 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.
- B. 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.
- C. 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.
- D. 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.

## 2.05 BOND BREAKER

- A. 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.
- B. Bond breaker shall be certified as meeting the requirements of ANSI/NSF 61 for contact with potable water.

## 2.06 FORM RELEASE AGENT

- A. Form releasing agents shall be certified as meeting the requirements of ANSI/NSF 61 for contact with potable water.
- B. 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.
- C. For steel forms, release agent shall prevent discoloration of the concrete due to rust.

## PART 3 - EXECUTION

### 3.01 FORM TOLERANCES

- A. 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

- B. 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.

- C. Where equipment is to be installed, comply with manufacturer's tolerances if more restrictive than above.
- D. 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.

### 3.02 FORM SURFACE PREPARATION

- A. 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.
- B. Coat form surfaces in contact with concrete with a form release agent prior to form installation.
- C. Keep form coatings off steel reinforcement, items to be embedded, and the previously placed concrete.
- D. 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.

### 3.03 BEVELED EDGES (CHAMFER)

- A. 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.

### 3.04 FORM PLACEMENT

- A. 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.
- B. Provide one cleanout and inspection opening (12 inches wide by 18 inches high) every 7 feet at the bottom of each lift of forms.
- C. Provide exterior corners in concrete members with bevels as specified.
- D. Provide means for removing forms without injury to the surface of finished concrete.
- E. Do not embed any form-tying device or part thereof other than metal in the concrete.
- F. Locate large end of taper tie on the "wet" side of the wall.
- G. Use only form or form-tying methods that do not cause spalling of the concrete upon form stripping or tie removal.
- H. 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.

### 3.05 FORM REUSE

- A. 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.



### 3.06 REMOVAL OF FORMS

- A. 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

- B. 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.

### 3.07 FORMED OPENINGS

- A. 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 water tightness. 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.

### 3.08 EMBEDDED ITEMS

- A. 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.

### 3.09 PIPES AND WALL SPOOLS CAST IN CONCRETE

- A. 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.
- B. 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.
- C. 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

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## SECTION 03151

### CONCRETE JOINTS, WATER STOPS, AND SEALANTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section describes materials, testing, and installation of construction and expansion joints, PVC water stops, premolded joint filler, joint sealant, bond breaker tape, preformed control joints, backing rod, and steel expansion joint dowels.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Leakage Testing of Hydraulic Structures: Section 03051.
- B. Concrete Formwork: Section 03111.
- C. Concrete Reinforcement: Section 03210.
- D. Concrete: Section 03300.
- E. Concrete Finishing and Curing: Section 03350.

##### 1.03 SUBMITTALS

- A. Submit shop drawings in accordance with the General Conditions and Section 01300.
- B. Submit manufacturer's literature, catalog data, and statement of compliance with referenced standards and specifications for materials specified herein.
- C. Submit material samples of PVC water stops.
- D. Provide technical data sheets for the Contractor's personnel and the Owner covering joint preparation, priming, and sealant materials application.
- E. Submit layouts for construction joints.

##### 1.04 MANUFACTURER'S SERVICES

- A. Prior to joint preparation for joints receiving sealant materials, the Contractor shall require joint manufacturer's technical representative to demonstrate at the site joint preparation, priming, and sealant materials application for the Contractor's personnel performing joint work.

## PART 2 - MATERIALS

### 2.01 PVC WATER STOP

#### A. Water stop shall be:

- A. Water stops shall be extruded from a PVC compound and shall be lock-rib, center-bulb, retro-fit or flat-strip type as manufactured by Greenstreak, A. C. Horn, Kirkhill Rubber Company, Vinylex, or equal. Water stop shall comply with Corps of Engineers Specification CRD-C-572-74.
- B. PVC waterstop for construction joints shall be flat ribbed type, 6 inches wide unless otherwise noted on the drawings, with a minimum thickness at any point of 3/8 inches. PVC waterstop shall be Model 732 by Greenstreak or approved equal.
- C. PVC waterstop for control joints shall be ribbed with a center bulb, 6 inches wide with a minimum thickness at any point of 3/8 inches. The center bulb shall have an O.D. not less than 1-3/8 inches. PVC waterstop shall be Model 732 by Greenstreak or approved equal.
- D. PVC waterstop for expansion joints shall be ribbed with a center bulb, 9 inches wide with a minimum thickness at any point of 3/8 inches. The center bulb shall have an O.D. not less than 1-3/8 inches. PVC waterstop shall be Model 738 by Greenstreak or approved equal.
- E. PVC waterstops for sealing existing concrete structures and new concrete placement shall be retro-fit type, 6 inches wide and 3-3/16 inches height with a minimum thickness at any point of 3/8 inches. The waterstop shall be attached to the existing concrete using 1/4" X 2-1/4" SS sleeve exp. Bolt with SS batten bars. PVC waterstop shall be Model 609 by Greenstreak or approved equal.
- F. All PVC waterstops shall have an integral fastening system consisting of hog rings and grommets.
- G. Extruded from virgin elastomeric PVC compound.
- H. Provide factory-made crosses, tees and ells fabricated by the waterstop manufactured using thermostatically controlled electric heat source.
- I. Resistant to chemical action with portland cement, alkalis, acids, and not affected by mildew or fungi. It shall show no effect when immersed for 10 days in a 10% solution of sulfuric or hydrochloric acid, saturated lime solution or salt water. Water stops shall be such that any cross section will be dense, homogeneous, and free from porosity and other imperfections. They shall be symmetrical in shape. When tested in accordance with Federal Standard No. 601, the material shall meet the following minimum requirements:

Requirement	ASTM Spec
Tensile strength, 2,000 psi	D638
Hardness, Shore durometer, 60-70	D2240
Elongation, ultimate, 280%	D638
Water absorption, dry weight, maximum (48 hours) 0.32%	D570
Specific gravity, 1.3	D792
Stiffness in flexure, 920 psi	D747
Cold brittleness, -35°F	D746
Tear resistance, 290 lbs/inch	D624

## 2.02 JOINT SEALANT FOR CONCRETE STRUCTURES

- A. Joint sealant shall be a multipart, gray, nonstaining, nonsagging, gun grade polyurethane sealant, which cures at ambient temperature to a firm, flexible, resilient, tear-resistant rubber. Sealant shall comply with ASTM C920, Type M, Grade P, Class 25 for horizontal joints and Grade NS, Class 25 for vertical joints and be recommended by the manufacturer for continuous immersion in water.

Characteristic or Parameter	Technical Requirements
Pot life	1 to 3 hours
Hardness	35 Shore A, $\pm 5$
Elongation	650%, ASTM D412
Tensile strength	200 psi, ASTM D412
Peel strength on concrete	No adhesion loss at 25 pounds
Temperature service range	40°F to 167°F
Immersion in water	Continuous

- B. Sealant shall be Tremco Vulkem 227 or Sikaflex-2CNS (for Grade NS, Class 25), Sikaflex-2CSL of Sika Corporation or Vulkem 245 (for Type M, Grade P, Class 25), or equal. Troweling of sealants into joints will not be permitted.
- C. For wastewater applications, use multi-component chemical resistant polysulfide sealant conforming to ASTM C 920, Type M, Grade NS, Class 25 such as Sonolastic Two-part, Sonneborn, Minneapolis, MN, Hornflex-L, Tamms, Beltsville, MD, or Cormax PSC, DuPont, or approved equal.

## 2.03 BACKING ROD FOR EXPANSION JOINTS

- A. Backing rod shall be an extruded closed-cell polyethylene foam rod, such as Minicel backer rod, manufactured by Industrial Systems Department, Plastic Products Group of Hercules, Inc., Middletown, Delaware, or equal. The rod shall be 1/4 inch larger in diameter than the joint width. Where possible, provide full-length sections for the joint; minimize splices. Apply backup rod and bond breaker tape in expansion joints.

## 2.04 BOND BREAKER TAPE

- A. Bond breaker tape shall be an adhesive-backed glazed butyl or polyethylene tape that will adhere to the premolded joint material or concrete surface. The tape shall be the same width as the joint. The tape shall be compatible with the sealant.

## 2.05 PREFORMED CONTROL JOINT

- A. Preformed control joint shall be a one-piece, flexible, PVC joint former, such as Kold-Seal Zip-Per Strip KSF-150-50-50, manufactured by Vinylex Corp., Knoxville, Tennessee, or a one-piece steel strip with preformed groove, such as Keyed Kold Retained Kap, manufactured by Burke Concrete Accessories, Inc., San Mateo, California, or equal. Provide the preformed control joint material in full-length unspliced pieces.

## 2.06 PREMOLDED JOINT FILLER FOR PAVEMENTS AND SLABS

- A. Joint filler shall be preformed, nonextruded type constructed of closed-cell neoprene conforming to ASTM D1752, Type I, as manufactured by W. R. Grace Company of Cambridge, Massachusetts; W. R. Meadows, Inc., Elgin, Illinois; or equal or bituminous-type preformed expansion joint filler conforming to ASTM D994.

## 2.07 PREMOLDED JOINT FILLER FOR HYDRAULIC STRUCTURES

- A. Sponge rubber per ASTM D1752, Type I or self-expanding cork per ASTM D1752, Type III.

## 2.08 STEEL EXPANSION JOINT DOWELS

- A. Steel expansion joint dowels shall conform to the following:
  - 1. Stainless steel bar dowels conforming to ASTM A276, Type 316.
- B. Expansion joint shall be thoroughly greased prior to placing adjoining wall or slab concrete.

## 2.09 STYROFOAM FILLER BLOCK

- A. Styrofoam filler blocks for future construction and expansion joints shall be Styrofoam SM brand as manufactured by Dow Chemical Company or equal.

## PART 3 - EXECUTION

### 3.01 PVC WATER STOPS

- A. Water stops shall be heat spliced at ends and intersections to ensure continuity. Bend water stops up from footing and slab joints and splice to wall water stop to result in a watertight structure. Construct forms for construction joints in such a manner as to prevent injury to water stops. Hold water stops securely in position in the construction joints by wire ties, continuous bars, and rings as indicated. Install water stops in construction and expansion joints in hydraulic structures or where shown in the drawings.
- B. Make field splices with a thermostatically controlled heating iron in conformance with the manufacturer's current recommendations. Allow at least 10 minutes before pulling or straining the new splice in any way. The finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80% of the unspliced materials.

### 3.02 CONSTRUCTION JOINTS

- A. Layout of construction joints shall be as shown in the drawings and according to the following guidelines:
  - 1. Provide horizontal construction joints at top of foundation members and slabs on grade and at the soffit of supported slabs and beams.
  - 2. Space horizontal construction joints at least 8 inches below bottom of slabs.
- B. For slabs-on-grade that are not subject to hydraulic loading, use formed construction joints. Maximum size of pour shall be 30 feet each way. Allow 24 hours between pours of adjacent slabs. Provide joints as specified or shown. Set continuous expansion joint strips between slabs and abutting vertical surfaces as indicated in the drawings.
- C. Place expansion joint fillers every 30 feet in straight runs of walks, at right-angle turns, and wherever concrete walks butt into vertical surfaces.
- D. For control joints of nonstructural slabs, provide partial depth plastic strips set flush with finished surface or 1/8-inch-wide joints cut with a diamond saw. Use control joints one-quarter to one-third the depth of the slab unless otherwise indicated.
- E. Construction joints shall be keyed, unless otherwise detailed. Form keyways by beveled strips or boards placed at right angles to the formed face. Except where otherwise shown in the drawings or specified, keyways shall be at least 1-1/2 inches in depth over at least 25% of the width of the section.
- F. After the pour has been completed to the construction joint and the concrete has hardened, thoroughly clean the entire surface of the joint of surface laitance, loose or defective concrete, and foreign material, and expose clean aggregate by sandblasting the surface of construction joints before placing the new concrete. Cover horizontal



construction joints with mortar. Spread uniformly and work thoroughly into all irregularities of the surface. The water-cement ratio of the mortar in place shall not exceed that of the concrete to be placed, and the consistency of the mortar shall be suitable for placing and working.

- G. In case of emergency, place additional construction joints. (An interval of 45 minutes between two consecutive batches of concrete shall constitute cause for an emergency construction joint.)

### 3.03 EXPANSION JOINTS

- A. Provide expansion joints with continuous edge reservoirs, which shall be filled with a joint sealant. Leave the material used for forming the reservoirs in place until immediately before the grooves are cleaned and filled with joint sealant. After removing edge forms from the reservoir, remove grout, loose concrete, and fins; then sandblast the slots. Allow the reservoirs to become thoroughly dry; then blow out the reservoirs and immediately prime and fill with the expansion joint sealant and backup materials. The primer used shall be supplied by the manufacturer of the joint sealant.

### 3.04 INSTALLATION OF PREMOLDED JOINT FILLER

- A. Install in joint accurately as shown. Attach to concrete with a bonding agent recommended by the joint sealant and joint filler manufacturer for compatibility.

### 3.05 INSTALLATION OF JOINT SEALANTS

- A. Immediately before installing the joint sealant, clean the joint cavity by sandblasting or power wire brushing. Install bond breaker tape per manufacturer's instructions.
- B. Apply masking tape along the edges of the exposed surface of the exposed joints.
- C. Application criteria for the sealant materials, such as temperature and moisture requirements and primer cure time, shall be in accordance with the recommendations of the sealant manufacturer.
- D. After the joints have been prepared as described above, apply the joint sealant. Apply the primer, if required, and joint sealant only with the equipment and methods recommended by the joint sealant manufacturer.
- E. Trowel the joints smooth with a tuck-pointing tool wiped with a solvent recommended by the sealant manufacturer.
- F. After the sealant has been applied, remove the masking tape and any sealant spillage.

### 3.06 INSTALLATION OF STEEL EXPANSION JOINT DOWELS

- A. Align dowels as indicated in the drawings. Secure tightly in forms with rigid ties. Orient dowels to permit joint movement.

### 3.07 CRACKING

- A. Saw joints in slabs before the formation of uncontrolled cracking (i.e., cracking that occurs at locations other than construction, control, or contraction joints) and as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing. Saw joints both during the day and night as required.
- B. If concrete cracks at locations other than construction, control, or contraction joints, the Contractor may be required to remove and replace the defective work (cracked concrete) in accordance with the provisions of this section, at no additional cost to the Owner.

### 3.08 LEAKAGE TESTING

- A. Test hydraulic structures in accordance with Section 03051.

END OF SECTION

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## SECTION 03205

### CONCRETE SIDEWALK AND DRIVEWAYS

**1. Description.**

Construct concrete sidewalks and driveways. Sidewalk will include sidewalk curb ramps.

**2. Materials.**

2500 psi min Portland Cement.

**3. Forms.**

Provide forms per plans

**4. Foundation.**

Compact fill areas, including cut areas under the sidewalk that have been excavated more than 6 inches below the bottom of sidewalk, to a minimum of 95% of AASHTO T99 density. The area to be compacted is defined as that area directly under the sidewalk and 1 foot beyond each side of the sidewalk when right-of-way allows.

**5. Joints.**

5.1 Expansion Joints: Form 1/2 inch expansion joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections with a preformed joint filler.

5.2 Contraction Joints:

5.2.1 Types: The Contractor may use open type or sawed contraction joints.

5.2.2 Open-Type Joints: Form open type contraction joints by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, remove the bulkhead. After finishing the sidewalk over the joint, edge the slot with a tool having a 1/2 inch radius.

5.2.3 Sawed Joints: If electing to saw the contraction joints, cut a slot approximately 3/16 inch wide and not less than 1-1/2 inches deep with a concrete saw after the concrete has set, and within the following periods of time:

Joints at not more than 30 feet intervals .....within 12 hours after finishing.

Remaining joints ..... within 96 hours after finishing.

**6. Placing Concrete.**

Place the concrete as specified in the ACI 318-14 Manual.

**7. Finishing.**

7.1 Screeding: Strike-off the concrete by means of a wood or metal screed, used perpendicular to the forms, to obtain the required grade and remove surplus water and laitance.

7.2 Surface Requirements: Imprint concrete as detailed in the Plans, otherwise provide a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10 foot

straightedge or more than 1/8 inch on a 5 foot transverse section. Finish the edge of the sidewalk with an edging tool having a radius of 1/2 inch.

**8. Curing.**

Cure the concrete as specified in the ACI 318-14 Manual.

**9. Method of Measurement.**

The quantity to be paid will be plan quantity, in square yards, completed and accepted. Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings, sidewalk curb, and driveways will be included in the area to be paid.

**10. Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section.

Excavation for new installations will be paid for under the items for the grading work on the project. For repairs and replacements, removal of the existing sidewalk or driveway will be included in the cost of new sidewalks and driveways. Payment will be made under: Item No. Concrete Sidewalks and Driveways- per square yard.

END OF SECTION -

SECTION 03210  
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes materials, testing, and installation of reinforcing steel in concrete.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Formwork: Section 03111.
- B. Concrete Joints, Water Stops, and Sealants: Section 03151.
- C. Concrete: Section 03300.
- D. Concrete Finishing and Curing: Section 03350.

1.03 SUBMITTALS

- A. Submit shop drawings in accordance with the General Conditions and Section 01300.
- B. Submit mill test certificates identifying chemical and physical analyses of each load of reinforcing steel delivered. If mill test reports are unavailable and the quantity of steel for a structure exceeds 5 tons, provide a laboratory test to prove conformance with the specified ASTM standard.
- C. Submit reinforcing bending lists and placing drawings for all reinforcing. Placing drawings shall indicate all openings (mechanical, electrical, equipment, and architectural) including additional reinforcing at openings and corner bar arrangements at intersecting beams, walls, and footings indicated in the typical detail and structural drawings. Placing drawings shall be coordinated with the concrete placing schedule. Each bending list and placing drawing submitted shall be complete for each major element of a structure (grade slabs, footings, walls, deck, floor, or roof slabs) including dowels and corner bars. Furnishing such lists shall not be construed that the lists will be reviewed for accuracy. The Contractor shall be wholly and completely responsible for the accuracy of the lists and for furnishing and placing reinforcing steel in accordance with the details shown in the drawings and as specified. Placing drawings shall be prepared by the Contractor and shall not incorporate photocopies of the contract drawings.

## PART 2 - MATERIALS

### 2.01 REINFORCING STEEL

- A. Reinforcement shall conform to ASTM A615 or A706, Grade 60.
- B. Fabricate reinforcing in accordance with the current edition of the Manual of Standard Practice, published by the Concrete Reinforcing Steel Institute. Bend reinforcing steel cold.
- C. Deliver reinforcing steel to the site bundled and with identifying tags.

### 2.02 WELDED WIRE REINFORCEMENT

- A. Welded wire reinforcement shall conform to ASTM A185.

### 2.03 TIE WIRE

- A. Tie wire shall be 16 gauge minimum, black, soft annealed.

### 2.04 BAR SUPPORTS

- A. Bar supports in beams and slabs exposed to view after form stripping shall be galvanized and plastic coated. Use concrete supports for reinforcing in concrete placed on grade.

### 2.05 BAR COUPLERS

- A. Reinforcing steel bar splicing couplers shall be a mechanical type as manufactured by Dayton Barsplice Inc., DYWIDAG, or equal. Use couplers which develop 125% of the specified yield strength of the reinforcing bars. Make field demonstrations and sample splicing prior to splicing bars being included into the work.

## PART 3 - EXECUTION

### 3.01 PLACING

- A. Place reinforcing steel in accordance with the current edition of Recommended Practice for Placing Reinforcing Bars, published by the Concrete Reinforcing Steel Institute.
- B. Place reinforcing in accordance with the following, unless otherwise indicated:
  - 1. Reinforcement indicated in the drawings is continuous through the structure to the farthest extent possible. Terminate bars 2 inches clear from faces of concrete.
  - 2. Splices may be used to provide continuity due to bar length limitations. Minimum length of bars spliced for this reason is 30 feet. Do not splice reinforcement that is detailed to be continuous in the drawings.

- C. Reinforcing steel, before being positioned and just prior to placing concrete, shall be free from loose mill and rust scale and from any coatings that may destroy or reduce the bond. Clean reinforcing steel by sandblasting or wire brushing and remove mortar, oil, paint, or dirt to remove materials that may reduce the bond.
- D. Do not straighten or rebend reinforcing steel in the field. Do not use reinforcing with bends not shown in the drawings.
- E. Position reinforcing steel in accordance with the drawings and secure by using annealed wire ties or clips at intersections and support by concrete or metal supports, spacers, or metal hangers. Do not place metal clips or supports in contact with the forms. Bend tie wires away from the forms to provide the specified concrete coverage. Bars additional to those shown in the drawings, which may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position, shall be provided by the Contractor at his own expense.
- F. Place reinforcement a minimum of 2 inches clear of any metal pipe or fittings.
- G. Secure reinforcing dowels in place prior to placing concrete. Do not press dowels into the concrete after the concrete has been placed.
- H. Roll wire mesh used for reinforcement flat before placing concrete. Support and tie wire mesh to prevent movement during concrete placement.
- I. Position dowels for masonry walls to occur at reinforced block cells.

### 3.02 SPLICES

- A. Splices shall be as indicated in the drawings. Unless otherwise shown, stagger splices in adjacent horizontal bars 48 bar diameters.

### 3.03 ADDITIONAL REINFORCEMENT AROUND OPENINGS

- A. Place additional reinforcement around pipe or openings as indicated in the drawings.

### 3.04 WELDING REINFORCEMENT

- A. Do not weld reinforcing steel unless specifically noted. Welding of reinforcing steel shall be in accordance with AWS D1.4.

### 3.05 PLACING WELDED WIRE FABRIC

- A. Extend fabric to within 2 inches of the edges of the slab and lap splices at least 1-1/2 courses of the fabric and a minimum of 6 inches. Tie laps and splices securely at ends and at least every 24 inches with 16-gauge black annealed steel wire. Pull fabric into position as the concrete is placed by means of hooks, and work concrete under the steel to ensure that it is placed at the proper distance above the bottom of the slab.

END OF SECTION



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## SECTION 03210

### CONCRETE SIDEWALK AND DRIVEWAYS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Construct concrete sidewalks and driveways. Sidewalk will include sidewalk curb ramps.

##### 1.02 MATERIALS

- A. 2500 psi min Portland Cement.

##### 1.03 FORMS

- A. Provide forms per plans.

##### 1.04 FOUNDATION

- A. Compact fill areas, including cut areas under the sidewalk that have been excavated more than 6 inches below the bottom of sidewalk, to a minimum of 95% of AASHTO T99 density. The area to be compacted is defined as that area directly under the sidewalk and 1 foot beyond each side of the sidewalk when right-of-way allows.

##### 1.05 JOINTS

- A. Expansion Joints: Form 1/2 inch expansion joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections with a preformed joint filler.
- B. Contraction Joints:
  - 1. 5.2.1 Types: The Contractor may use open type or sawed contraction joints.
  - 2. 5.2.2 Open-Type Joints: Form open type contraction joints by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, remove the bulkhead. After finishing the sidewalk over the joint, edge the slot with a tool having a 1/2 inch radius.
  - 3. 5.2.3 Sawed Joints: If electing to saw the contraction joints, cut a slot approximately 3/16 inch wide and not less than 1-1/2 inches deep with a concrete saw after the concrete has set, and within the following periods of time:
    - a. Joints at not more than 30 feet intervals .....within 12 hours after finishing.

- b. Remaining joints ..... within 96 hours after finishing.

#### 1.06 PLACING CONCRETE

- A. Place the concrete as specified in the ACI 318-14 Manual.

#### 1.07 FINISHING

- A. Screeding: Strike-off the concrete by means of a wood or metal screed, used perpendicular to the forms, to obtain the required grade and remove surplus water and laitance.
- B. Surface Requirements: Imprint concrete as detailed in the Plans, otherwise provide a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10 foot straightedge or more than 1/8 inch on a 5 foot transverse section. Finish the edge of the sidewalk with an edging tool having a radius of 1/2 inch.

#### 1.08 CURING

- A. Cure the concrete as specified in the ACI 318-14 Manual.

#### 1.09 METHOD OF MEASUREMENT

- A. The quantity to be paid will be plan quantity, in square yards, completed and accepted. Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings, sidewalk curb, and driveways will be included in the area to be paid.

#### 1.10 BASIS OF PAYMENT

- A. Price and payment will be full compensation for all work specified in this Section.
- B. Excavation for new installations will be paid for under the items for the grading work on the project. For repairs and replacements, removal of the existing sidewalk or driveway will be included in the cost of new sidewalks and driveways. Payment will be made under: Item No. Concrete Sidewalks and Driveways- per square yard.

PART 2 - MATERIALS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 03290

### JOINTS IN CONCRETE

#### PART 1 - GENERAL

##### 1.01 REQUIREMENT

- A. The CONTRACTOR shall construct all joints in concrete at the locations shown. Joints required in concrete structures are of various types and will be permitted only where shown, unless specifically accepted by the ENGINEER.

##### 1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Federal Specifications:

1. TT-S-0227E(3) Sealing Compound, elastomeric type, Multi-component for Calking, Sealing, and Glazing Buildings and Other Structures).

B. U.S. Army Corps of Engineers Specifications:

1. CRD-C572 PVC Waterstop.

C. Commercial Standards:

1. ASTM A 775 Specification for Epoxy-Coated Reinforcing Steel Bars
2. ASTM C 920 Specification for Elastomeric Joint Sealants
3. ASTM D 412 Test Methods for Rubber Properties in Tension
4. ASTM D 624 Test Method for Rubber Property -- Tear Resistance
5. ASTM D 638 Test Method for Tensile Properties of Plastics
6. ASTM D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
7. ASTM D 747 Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam
8. ASTM D 1056 Specification for Flexible Cellular Materials -- Sponge or Expanded Rubber
9. ASTM D 1752 Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
10. ASTM D 2240 Test Method for Rubber Property -- Durometer Hardness

11. ASTM D 2241 Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series)

1.03 TYPES OF JOINTS

- A. Construction Joints: When fresh concrete is placed against a hardened concrete surface, the joint between the two pours is called a construction joint. Unless otherwise specified, all joints in water bearing members shall be provided with a waterstop and/or sealant groove of the shape specified and shown. The surface of the first pour may also be required to receive a coating of bond breaker as shown.
- B. Contraction Joints: Contraction joints are similar to construction joints except that the fresh concrete shall not bond to the hardened surface of the first pour, which shall be coated with a bond breaker. The slab reinforcement shall be stopped 4-1/2 inches from the joint; which is provided with a sleeve-type dowel, to allow shrinkage of the concrete of the second pour. Waterstop and/or sealant groove shall also be provided when specified or shown.
- C. Expansion Joints: To allow the concrete to expand freely, a space is provided between the two pours, the joint shall be formed as shown. This space is obtained by placing a filler joint material against the first pour, which acts as a form for the second pour. Unless otherwise specified, all expansion joints in water bearing members shall be provided with a center-bulb type waterstop as shown.
- D. Premolded expansion joint material shall be installed with the edge at the indicated distance below or back from finished concrete surface, and shall have a slightly tapered, dressed, and oiled wood strip secured to or placed at the edge thereof during concrete placement, which shall later be removed to form space for sealing material. The spaces formed shall be filled with a joint sealant as specified.
- E. The space so formed shall be filled with a joint sealant material as specified in the Paragraph in Part 2 entitled "Joint Sealant." In order to keep the two wall or slab elements in line the joint shall also be provided with a sleeve-type dowel as shown.
- F. Control Joint (Weakened Plane): The function of the control joint is to provide a weaker plane in the concrete, where shrinkage cracks will probably occur. A groove, of the shape and dimensions shown, is formed or saw-cut in the concrete. This groove is afterward filled with a joint sealant material as specified in the Paragraph in Part 2 entitled "Joint Sealant."
- G. All other Joints, bearing devices, and elastomeric bearing pads for bridge structures shall comply with CSS Section 51.

1.04 CONTRACTOR SUBMITTALS

- A. Waterstops: Prior to production of the material required under this contract, qualification samples shall be submitted. Such samples shall consist of extruded or molded sections of each size or shape to be used, and shall be accomplished so that the material and

workmanship represents in all respects the material to be furnished under this contract. The balance of the material to be used under this contract shall not be produced until after the ENGINEER has reviewed the qualification samples.

- B. Joint Sealant: Prior to ordering the sealant material, the CONTRACTOR shall submit to the ENGINEER for the ENGINEER's review, sufficient data to show general compliance with the requirements of the Contract Documents. Certified test reports from the sealant manufacturer on the actual batch of material being supplied indicating compliance with the above requirements shall be furnished the ENGINEER before the sealant is used on the job.
- C. Shipping Certification: The CONTRACTOR shall provide written certification from the manufacturer as an integral part of the shipping form, to show that all of the material shipped to this project meets or exceeds the physical property requirements of the Contract Documents. Supplier certificates are not acceptable.
- D. Joint Location: The CONTRACTOR shall submit placement shop drawings showing the location and type of all joints for each structure.

#### 1.05 QUALITY ASSURANCE

- A. Waterstop manufacturer shall demonstrate five years (minimum) continuous, successful experience in production of waterstops.
- B. Waterstop Inspection: It is required that all waterstop field joints shall be subject to rigid inspection, and no such work shall be scheduled or started without having made prior arrangements with the ENGINEER to provide for the required inspections. Not less than 24 hours notice shall be provided to the ENGINEER for scheduling such inspections.
- C. All field joints in waterstops shall be subject to rigid inspection for misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects which would reduce the potential resistance of the material to water pressure at any point. All defective joints shall be replaced with material which shall pass said inspection, and all faulty material shall be removed from the site and disposed of by the CONTRACTOR at its own expense.
- D. The following waterstop defects represent a partial list of defects which shall be grounds for rejection:
  - 1. Offsets at joints greater than 1/16-inch or 15 percent of material thickness, at any point, whichever is less.
  - 2. Exterior crack at joint, due to incomplete bond, which is deeper than 1/16-inch or 15 percent of material thickness, at any point, whichever is less.
  - 3. Any combination of offset or exterior crack which will result in a net reduction in the cross section of the waterstop in excess of 1/16-inch or 15 percent of material thickness at any point, whichever is less.

4. Misalignment of joint which result in misalignment of the waterstop in excess of 1/2-inch in 10 feet.
  5. Porosity in the welded joint as evidenced by visual inspection.
  6. Bubbles or inadequate bonding which can be detected with a penknife test. (If, while prodding the entire joint with the point of a pen knife, the knife breaks through the outer portion of the weld into a bubble, the joint shall be considered defective.)
- E. Waterstop Samples: Prior to use of the waterstop material in the field, a sample of a fabricated mitered cross and a tee constructed of each size or shape of material to be used shall be submitted to the ENGINEER for review. These samples shall be fabricated so that the material and workmanship represent in all respects the fittings to be furnished under this contract. Field samples of fabricated fittings (crosses, tees, etc.) will be selected at random by the ENGINEER for testing by a laboratory at the OWNER's expense. When tested, they shall have a tensile strength across the joints equal to at least 600 psi.
- F. Construction Joint Sealant: The CONTRACTOR shall prepare adhesion and cohesion test specimens as specified herein, at intervals of 5 working days while sealants are being installed.
- G. The sealant material shall show no signs of adhesive or cohesive failure when tested in accordance with the following procedure in laboratory and field tests:
1. Sealant specimen shall be prepared between 2 concrete blocks (1-inch by 2-inch by 3-inch). Spacing between the blocks shall be 1-inch. Coated spacers (2-inch by 1-1/2-inch by 1/2-inch) shall be used to insure sealant cross-sections of 1/2-inch by 2 inches with a width of 1-inch.
  2. Sealant shall be cast and cured according to manufacturer's recommendations except that curing period shall be not less than 24 hours.
  3. Following curing period, the gap between blocks shall be widened to 1-1/2-inch. Spacers shall be used to maintain this gap for 24 hours prior to inspection for failure.
- H. Store waterstops under tarps to protect from oil, dirt, and sunlight.

#### 1.06 GUARANTEE

- A. The CONTRACTOR shall provide a 5-year written guarantee of the entire sealant installation against faulty and/or incompatible materials and workmanship, together with a statement that it agrees to repair or replace, to the satisfaction of the OWNER, at no additional cost to the OWNER, any such defective areas which become evident within said 5-year guarantee period.

## PART 2 - PRODUCTS

### 2.01 PVC WATERSTOPS

- A. General: Waterstops shall be extruded from an elastomeric polyvinyl chloride compound containing the plasticizers, resins, stabilizers, and other materials necessary to meet the requirements of these Specifications. No reclaimed or scrap material shall be used. The CONTRACTOR shall obtain from the waterstop manufacturer and shall furnish to the ENGINEER for review, current test reports and a written certification of the manufacturer that the material to be shipped to the job meets the physical requirements as outlined in the U.S. Army Corps of Engineers Specification CRD-C572 and those listed herein.
- B. Flatstrip and Center-Bulb Waterstops: Flatstrip and center-bulb waterstops shall be as detailed and as manufactured by: Esterline/Kirkhill Rubber Co., Brea, California; Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; Greenstreak Plastic Products Co., St. Louis, Missouri; or equal; provided, that at no place shall the thickness of flat strip waterstops, including the center bulb type, be less than 3/8-inch.
- C. Multi-Rib Waterstops: Multi-rib waterstops, where required, shall be as detailed and as manufactured by Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; Greenstreak Plastic Products Co., St. Louis, Missouri; or equal. Prefabricated joint fittings shall be used at all intersections of the ribbed-type waterstops.
- D. Other Types of Waterstops: When other types of waterstops, not listed above are required and shown, they shall be subjected to the same requirements as those listed herein.
- E. Waterstop Testing Requirements: When tested in accordance with the specified test standards, the waterstop material shall meet or exceed the following requirements:

<u>Physical Property, Sheet Material</u>	<u>Value</u>	<u>ASTM Standard</u>
Tensile Strength-min (psi)	1750	D 638, Type IV
Ultimate Elongation-min (percent)	350	D 638, Type IV
Low Temp Brittleness-max (degrees F)	-35	D 746
Stiffness in Flexure-min (psi)	400	D 747
Accelerated Extraction (CRD-C572)		
Tensile Strength-min (psi)	1500	D 638, Type IV
Ultimate Elongation-min (percent)	300	D 638, Type IV
Effect of Alkalies (CRD-C572)		
Change in Weight (percent)	+0.25/-0.10	-----
Change in Durometer, Shore A	+5	D 2240
Finish Waterstop		
Tensile Strength-min (psi)	1400	D 638, Type IV
Ultimate Elongation-min (percent)	280	D 638, Type IV



## 2.02 JOINT SEALANT

- A. Joint sealant shall be polyurethane polymer designed for bonding to concrete which is continuously submerged in water. No material will be acceptable which has an unsatisfactory history as to bond or durability when used in the joints of water retaining structures.

- B. Joint sealant material shall meet the following requirements (73 degrees F and 50 percent R.H.):

Work Life	45 - 90 minutes
Time to Reach 20 Shore "A" Hardness (at 77 degrees F, 200 gr quantity)	24 hours, maximum
Ultimate Hardness (ASTM D 2240)	30 - 40 Shore "A"
Tensile Strength (ASTM D 412)	250 psi, minimum
Ultimate Elongation (ASTM D 412)	400 percent, minimum
Tear Resistance (Die C ASTM D 624)	75 pounds per inch of thickness, minimum
Color	Light Gray

- C. All polyurethane sealants for waterstop joints in concrete shall conform to the following requirements:

1. Sealant shall be 2-part polyurethane with the physical properties of the cured sealant conforming to or exceeding the requirements of ANSI/ASTM C 920 or Federal Specification TT-S-0227 E(3) for 2-part material, as applicable.
2. For vertical joints and overhead horizontal joints, only "non-sag" compounds shall be used; all such compounds shall conform to the requirements of ANSI/ASTM C 920 Class 25, Grade NS, or Federal Specification TT-S-0227 E(3), Type II, Class A.
3. For plane horizontal joints, the self-leveling compounds which meet the requirements of ANSI/ASTM C 920 Class 25, Grade P, or Federal Specification TT-S-0227 E(3), Type I shall be used. For joints subject to either pedestrian or vehicular traffic, a compound providing non-tracking characteristics, and having a Shore "A" hardness range of 35 to 45, shall be used.
4. Primer materials, if recommended by the sealant manufacturer, shall conform to the printed recommendations of the sealant manufacturer.

- D. All sealants, wherever shown, or required hereunder shall be PSI-270 as manufactured by Polymeric Systems Inc.; Elastothane 227R as manufactured by Pacific Polymers; Sikaflex 2C, as manufactured by Sika Corporation; or equal.

- E. Sealants for non-waterstop joints in concrete shall conform to the requirements of Section 07920, "Sealants and Calking."

## 2.03 JOINT MATERIALS

- A. Bearing Pad: Bearing pad to be neoprene conforming to ASTM D 2000 BC 420, 40 durometer hardness unless otherwise noted.
- B. Neoprene Sponge: Sponge to be neoprene, closed-cell, expanded, conforming to ASTM D 1056, type 2C3-E1.
- C. Joint Filler:
  - 1. Joint filler for expansion joints in waterholding structures shall be neoprene conforming to ASTM D1056, type 2C5-E1.
  - 2. Joint filler material in other locations shall be of the preformed non-extruding type joint filler constructed of cellular neoprene sponge rubber or polyurethane of firm texture. Bituminous fiber type will not be permitted. All non-extruding and resilient-type preformed expansion joint fillers shall conform to the requirements and tests set forth in ASTM D 1752 for Type I, except as otherwise specified herein.

## 2.04 PREFORMED JOINT FILLER

- A. Preformed joint filler material shall be of the preformed non-extruding type joint filler constructed of cellular neoprene sponge rubber or polyurethane of firm texture. Bituminous fiber type will not be permitted. All non-extruding and resilient-type preformed expansion joint fillers shall conform to the requirements and tests set forth in ASTM D 1752 for Type I, except as otherwise specified herein.
- B. Unless otherwise noted, preformed joint filler shall be a non-extruding, resilient, bituminous type conforming to the requirements of ASTM D 1751.

## 2.05 BACKING ROD

- A. Backing rod shall be an extruded closed-cell, polyethylene foam rod. The material shall be compatible with the joint sealant material used and shall have a tensile strength of not less than 40 psi and a compression deflection of approximately 25 percent at 8 psi. The rod shall be 1/8-inch larger in diameter than the joint width except that a one-inch diameter rod shall be used for a 3/4-inch wide joint.

## 2.06 BOND BREAKER

- A. Bond breaker shall be Super Bond Breaker as manufactured by Burke Company, San Mateo, California; Select Cure CRB as manufactured by Select Products Co., Upland, California; or equal. It shall contain a fugitive dye so that areas of application will be readily distinguishable.

## 2.07 BENTONITE WATERSTOP

- A. Where called for in the Contract Documents, bentonite type waterstop, which shall expand in the presence of water to form a watertight joint seal without damaging the concrete in which it is cast, shall be provided.
- B. The bentonite waterstop shall be composed of 75 percent bentonite. The balance of the material shall be butyl rubber-hydrocarbon with less than 1.0 percent volatile matter. The waterstop shall contain no asbestos fibers or asphaltics.
- C. The manufacturer's rated application temperature range shall be from 5 to 125 degrees F. The service temperature range shall be from -40 to 212 degrees F.
- D. The cross-sectional dimensions of the unexpanded waterstop shall be one inch by 3/4-inch.
- E. The waterstop shall be provided with an adhesive backing which will provide excellent adhesion to concrete surfaces.

## 2.08 SLIP DOWELS

- A. Slip dowels in joints shall be A36 smooth epoxy-coated bars, conforming to ASTM A 775.

## 2.09 PVC TUBING

- A. PVC tubing in joints shall be Sch. SDR 13.5, conforming to ASTM D 2241.

# PART 3 - EXECUTION

## 3.01 GENERAL

- A. Waterstops of the type specified herein shall be embedded in the concrete across joints as shown. All waterstops shall be fully continuous for the extent of the joint. Splices necessary to provide such continuity shall be accomplished in conformance to printed instructions of manufacturer of the waterstops. The CONTRACTOR shall take suitable precautions and means to support and protect the waterstops during the progress of the work and shall repair or replace at its own expense any waterstops damaged during the progress of the work. All waterstops shall be stored so as to permit free circulation of air around the waterstop material.
- B. When any waterstop is installed in the concrete on one side of a joint, while the other half or portion of the waterstop remains exposed to the atmosphere for more than 2 days, suitable precautions shall be taken to shade and protect the exposed waterstop from direct rays of the sun during the entire exposure and until the exposed portion of the waterstop is embedded in concrete.

### 3.02 SPLICES IN WATERSTOPS

- A. Splices in waterstops shall be performed by heat sealing the adjacent waterstop sections in accordance with the manufacturer's printed recommendations. It is essential that:
  - 1. The material not be damaged by heat sealing.
  - 2. The splices have a tensile strength of not less than 60 percent of the unspliced materials tensile strength.
  - 3. The continuity of the waterstop ribs and of its tubular center axis be maintained.
- B. Butt joints of the ends of 2 identical waterstop sections may be made while the material is in the forms.
- C. All joints with waterstops involving more than 2 ends to be joined together, and all joints which involve an angle cut, alignment change, or the joining of 2 dissimilar waterstop sections shall be prefabricated by the CONTRACTOR prior to placement in the forms, allowing not less than 24-inch long strips of waterstop material beyond the joint. Upon being inspected and approved, such prefabricated waterstop joint assemblies shall be installed in the forms and the ends of the 24-inch strips shall be butt welded to the straight run portions of waterstop in place in the forms.
- D. Where a centerbulb waterstop intersects and is joined with a non-centerbulb waterstop, care shall be taken to seal the end of the centerbulb, using additional PVC material if needed.

### 3.03 JOINT CONSTRUCTION

- A. Setting Waterstops: In order to eliminate faulty installation that may result in joint leakage, particular care shall be taken of the correct positioning of the waterstops during installation. Adequate provisions must be made to support and anchor the waterstops during the progress of the WORK and to insure the proper embedment in the concrete. The symmetrical halves of the waterstops shall be equally divided between the concrete pours at the joints. The center axis of the waterstops shall be coincident with the joint openings. Maximum density and imperviousness of the concrete shall be insured by thoroughly working it in the vicinity of all joints.
- B. In placing flat-strip waterstops in the forms, means shall be provided to prevent them from being folded over by the concrete as it is placed. Unless otherwise shown, all waterstops shall be held in place with light wire ties on 12-inch centers which shall be passed through the edge of the waterstop and tied to the curtain of reinforcing steel. Horizontal waterstops, with their flat face in a vertical plane, shall be held in place with continuous supports to which the top edge of the waterstop shall be tacked. In placing concrete around horizontal waterstops, with their flat face in a horizontal plane, concrete shall be worked under the waterstops by hand so as to avoid the formation of air and rock pockets.

- C. In placing centerbulb waterstops in expansion joints, the centerbulb shall be centered on the joint filler material.
- D. Waterstop in vertical wall joints shall stop 6 inches from the top of the wall where such waterstop does not connect with any other waterstop and is not to be connected to for a future concrete placement.
- E. Joint Location: Construction joints, and other types of joints, shall be provided where shown. When not shown, construction joints shall be provided at 25-foot maximum spacing for all concrete construction, unless noted otherwise. Where joints are shown spaced greater than 40 feet apart, additional joints shall be provided to maintain the 25-foot maximum spacing. The location of all joints, of any type, shall be submitted for acceptance by the ENGINEER.
- F. Joint Preparation: Special care shall be used in preparing concrete surfaces at joints where bonding between 2 sections of concrete is required. Unless otherwise shown, such bonding will be required at all horizontal joints in walls. Surfaces shall be prepared in accordance with the requirements of Section [03300], "Cast-in-Place Concrete." Except on horizontal wall construction joints, wall to slab joints or where otherwise shown or specified, at all joints where waterstops are required, the joint face of the first pour shall be coated with a bond breaker as specified herein.
- G. Construction Joint Sealant: Construction joints in water-bearing floor slabs, and elsewhere as shown, shall be provided with tapered grooves which shall be filled with a construction joint sealant. The material used for forming the tapered grooves shall be left in the grooves until just before the grooves are cleaned and filled with joint sealant. After removing the forms from the grooves, all laitance and fins shall be removed, and the grooves shall be sand-blasted. The grooves shall be allowed to become thoroughly dry, after which they shall be blown out; immediately thereafter, they shall be primed, bond breaker tape placed in the bottom of the groove, and filled with the construction joint sealant. The primer used shall be supplied by the same manufacturer supplying the sealant. No sealant will be permitted to be used without a primer. Care shall be used to completely fill the sealant grooves. Areas designated to receive a sealant fillet shall be thoroughly cleaned, as outlined for the tapered grooves, prior to application of the sealant.
- H. The primer and sealant shall be placed strictly in accordance with the printed recommendations of the manufacturer, taking special care to properly mix the sealant prior to application. The sides of the sealant groove shall not be coated with bond breaker, curing compound, or any other substance which would interfere with proper bonding of the sealant. All sealant shall achieve final cure at least 7 days before the structure is filled with water.
- I. All sealant shall be installed by a competent waterproofing specialty contractor who has a successful record of performance in similar installations. Before work is commenced, the crew doing the WORK shall be instructed as to the proper method of application by a representative of the sealant manufacturer.

- J. Thorough, uniform mixing of 2-part, catalyst-cured materials is essential; special care shall be taken to properly mix the sealer before its application. Before any sealer is placed, the CONTRACTOR shall arrange to have the crew doing the WORK carefully instructed as to the proper method of mixing and application by a representative of the sealant manufacturer.
- K. Any joint sealant which, after the manufacturer's recommended curing time for the job conditions of the WORK hereunder, fails to fully and properly cure shall be completely removed; the groove shall be thoroughly sandblasted to remove all traces of the uncured or partially cured sealant and primer, and shall be re-sealed with the specified joint sealant. All costs of such removal, joint treatment, re-sealing, and appurtenant work shall be at the expense of the CONTRACTOR.
- L. Bentonite Waterstop:
1. Where a bentonite waterstop is called for in the Contract Documents, it shall be installed with the manufacturer's instructions and recommendations; except, as modified herein.
  2. When requested by the ENGINEER, the manufacturer shall provide technical assistance in the field.
  3. Bentonite waterstop shall only be used where complete confinement by concrete is provided. Bentonite waterstop shall not be used in expansion or contraction joints nor in the first 6 inches of any intersecting joint.
  4. The bentonite waterstop shall be located as near as possible to the center of the joint and it shall be continuous around the entire joint. The minimum distance from the edge of the waterstop to the face of the member shall be 5 inches.
  5. Where the thickness of the concrete member to be placed on the bentonite waterstop is less than 12 inches, the waterstop shall be placed in grooves formed or ground into the concrete. The groove shall be at least 3/4 inch deep and 1-1/4 inches wide. When placed in the groove, the minimum distance from the edge of the waterstop to the face of the member shall be 2.5 inches.
  6. Where a bentonite waterstop is used in combination with PVC waterstop, the bentonite waterstop shall overlap the PVC waterstop for a minimum of 6 inches and shall be placed in contact with the PVC waterstop.
  7. The bentonite waterstop shall not be placed when the temperature of the waterstop material is below 40 degrees F. The waterstop material may be warmed so that it shall remain above 40 degrees F during placement; however, means used to warm the material shall in no way harm the material or its properties. The waterstop shall not be installed where the air temperature falls outside the manufacturer's recommended range.

8. The concrete surface under the bentonite waterstop shall be smooth and uniform. The concrete shall be ground smooth if needed. Alternately, the bentonite waterstop shall be bonded to the surface using an epoxy grout which completely fills all voids and irregularities beneath the waterstop material. Prior to installation, the concrete surface shall be wire brushed to remove any laitance or other materials that may interfere with the bonding of epoxy.
9. The bentonite waterstop shall be secured in place with concrete nails and washers at 12-inch maximum spacing. This shall be in addition to the adhesive backing provided with the waterstop.

END OF SECTION

## SECTION 03300

### CONCRETE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section describes materials, mixing, testing, and placing of concrete and grout.
- B. Related Work Specified Elsewhere: Divisions 2 and 3
- 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.
    - a. 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.
  10. Plant Qualification: Submit certification from the National Ready Mixed Concrete Association or FDOT indicating compliance with the specified qualification requirements.
  11. 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  $70^{\circ}\text{F} \pm 3^{\circ}\text{F}$  for at least 30 minutes, measure within 30 minutes thereafter to determine original length, then submerge in saturated lime water at  $73^{\circ}\text{F} \pm 3^{\circ}\text{F}$ . 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  $73^{\circ}\text{F} \pm 3^{\circ}\text{F}$  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

### 2.01 NONDOMESTIC CEMENT AND ADDITIVES

- A. 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.
- B. 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.

## 2.02 CEMENT

- A. 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.
- B. 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.
- C. Maximum tricalcium aluminate shall not exceed 8%. The maximum percent alkalis shall not exceed 0.6%.

## 2.03 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.
- B. 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.
- C. 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.
- D. Concrete Admixtures
  - 2. 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.
  - 3. 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.

4. Do not use any admixture that contains chlorides or other corrosive elements in any concrete. Admixtures shall be nontoxic after 30 days.

E. 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:
    - i. Maximum carbon content: 3%
    - ii. Maximum sulfur trioxide (SO<sub>3</sub>) content: 4%
    - iii. Maximum loss on ignition: 3%
    - iv. Maximum water requirement (as a percent of control): 100%
    - v. Fineness, maximum retained on No. 325 sieve: 25%

F. Superplasticizer

1. Comply with ASTM C1017, Type 1 or 2.

G. Nonshrink Grout

1. Nonshrink grout shall conform to the Corps of Engineers Specification for Nonshrink Grout, CRD-621-83, and to these specifications. Use a nongas-liberating 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.

H. 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.

I. 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.

J. 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

K. 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.
  - h. The grout shall be suitable for supporting precision machinery subject to high impact and shock loading in industrial environments while exposed to elevated temperature as high as 150°F, with a load of 1,200 psi.
  - i. Products: Escoweld 7505E, with 7530 aggregate, or equal.
2. Epoxy primer shall be a lead free, chrome free, rust inhibitive, two-component epoxy primer specifically designed for use on metal substrates and in conjunction with epoxy grout products. Products: Escoweld 1014E Rust Inhibitive Epoxy Primer or equal.

3. Nonbonding Filler for Anchor Bolt Sleeves: Escoweld 7506 or equal.
  4. Epoxy Grout Liquid: Escoweld 7502E or 7507E or equal.
- L. Joint Mortar Bed
1. Mortar or grout placed on horizontal construction joints shall be a mixture of cement, sand, and water in the same proportions used in the concrete but with coarse aggregate omitted.
- M. Epoxy Bonding Compound
1. Bonding compound shall be Sikadur 32 Hi-Mod, Sika Chemical Corporation, Lyndhurst, New Jersey; Concrevic by BASF; Euco Epoxy 452 by Euclid Chemical Company; or equal.
- N. Nonepoxy Bonding Compound
1. Use Weldcrete by Larsen Products Corp., Link by Sta-Dry Manufacturing Corp., Euco Weld by Euclid Chemical Co., or equivalent. The compound shall be rewettable for up to two weeks.
- O. Concrete Mix Design
1. Conform to ASTM C94, except as modified by these specifications.
  2. Air content as determined by ASTM C231 shall be 2%  $\pm$ 1%.
  3. Provide concrete with the following compressive strengths at 28 days and proportion it for strength and quality requirements in accordance with ACI 318, "Proportioning on the Basis of Field Experience," to achieve 28-day compressive strength as follows:

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.

P. Granular Base

1. Use structural backfill material as specified in Section 03123.

Q. 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.

R. 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.

S. 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

#### 3.01 SITE-MIXED CONCRETE

- A. Conform to ACI 304 as modified by these specifications.
- B. 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.
- C. Use equipment that can accurately proportion cement, coarse and fine aggregates, admixtures, and water. Proportion cement and aggregate by weight.
- D. Discharge each entire batch before recharging. Do not allow any batch to exceed the manufacturer's rated capacity of the mixer.
- E. Mixing time shall be as follows:
  1. For mixer of a capacity of 1 cubic yard or less, one and one-half minutes after batching is completed.



2. 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.
3. The mixer shall revolve at a uniform rate as specified by the manufacturer for the mixing equipment.

A. 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.

B. 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.

C. 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. Keep sufficient protective covering ready at all times 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 horizontal. 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.

D. 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.

E. 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.

F. 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.

G. 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.

H. 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.

I. 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.

J. 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 nonshrink grout. Grout and grouting procedure shall be in accordance with API 686, Chapter 4, paragraphs 3.6 and 3.7, and Chapter 5.

K. 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.

L. Concrete Tests

1. Concrete quality testing will be performed on the concrete by the Contractor per Section 01400, Testing and Inspection and as follows:

M. 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.

N. 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.

- O. 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.
1. Determine concrete slump by ASTM C143 with each strength test sampling and as required to establish consistency.
  2. Determine air content of the concrete using ASTM C231 to verify the percentage of air in the concrete immediately prior to depositing in forms.
  3. Concrete acceptance shall be based on the requirements of ACI 318.
  4. 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

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## SECTION 03310

### MORTAR

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK:

- A. Mortar shall conform to the property or proportion requirements of ASTM C270, latest edition. Non-load bearing and load-bearing concrete masonry shall be laid in mortar Type M.
- B. All concrete work shall be constructed in accordance with all of the applicable provisions of Section 03300 - Cast In Place & Precast Concrete.

##### 1.02 STANDARDS

- A. National Concrete Masonry Association Specifications for the Design and Construction of Load Bearing Concrete Masonry.
- B. American National Standard Building Code requirements for reinforced masonry.
- C. National Concrete Masonry Association, T.E.K. Series.
- D. South Florida Building Code, current edition.

##### 1.03 RELATED SECTIONS

- A. Section 02574 – Sanitary Sewer Manholes.
- B. Section 03300 - Cast In Place & Precast Concrete.

##### 1.04 SUBMITTALS

- A. The Engineer of Record shall be supplied with shop drawings consisting of product data and samples. Include design mix, required environmental conditions, and admixture limitations.
- B. Submit reports to the Engineer of Record on mortar indicating conformance of mortar to property requirements of ASTM C270

##### 1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 530 and ACI 530.1.
- B. Where references are made to standards, the latest edition of the listed standard shall apply.



## 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products in conformance with manufacturer's recommendations
- B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

## PART 2 - DOCUMENTS

### 2.01 MATERIALS

- A. Portland cement: ASTM C150. Portland cement shall be Type II where exposed to sewage. Otherwise, Type I shall be used.
- B. Masonry cement: ASTM C91, Type II, white or gray.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Sand: ASTM C144, sharp, natural sand mined in fresh water, hard durable grains, free of soft, flaky particles, salt, alkalis and organic material. Saltwater sand strictly prohibited.
- E. Water: Potable.
- F. Waterproofing additive: Omicron mortar-proofing as manufactured by the Master Builders Co.
- G. Mortar: Mortar for above ground masonry shall conform to ASTM Standard C270, latest edition, "Mortar for Unit Masonry" and the following requirements:
  - 1. Use no antifreeze ingredient in the mortar.
  - 2. Color shall be natural.
  - 3. Submit data indicating proportions and materials to be used.

## PART 3 - EXECUTION

### 3.01 PREPARATION AND MIXING

- A. Mortar for Masonry Walls and Partitions: Cement mortar mix for all unit masonry work shall be according to ASTM C270, Type M, 2500 psi minimum compressive strength at 28 days.
- B. Mortar for Glass Unit Masonry: ASTM C270, Type S, using the Property specification.

C. Mortar Mix proportions:

1. One-part Portland cement.
2. One quarter part hydrated lime (Lime putty shall not exceed 10% of the cement used).
3. 3 to 4 parts of damp loose sand.
4. Water: Sufficient for workable mix. Re-tempering not permitted.
5. Water proofing additive: add to mix for all exterior walls. Use a waterproofing admix equal to "OmicronOM" by Master Builders or "Mortarite" by Lambco, or approved equal, in all mortar for exterior use if the masonry cement has not been waterproofed by the addition of a waterproofing agent by the manufacturer. Proportion and use in accordance with the manufacturer's printed directions.

D. Colors: natural.

E. Mixing:

1. Measurement of materials shall be such that the specified proportions are controlled and accurately maintained.
2. Initially, sand and cement shall be thoroughly dry mixed, hydrated lime then added to the mix and then water to obtain a proper working consistency. Materials shall be evenly distributed and dry as good workability will allow.
3. Workability or consistency of mortar on the board shall be sufficiently wet to be worked under the trowel. Water for tempering shall be available on the scaffold at all times.
4. Mortar which has begun to set or has stood for more than one hour shall be discarded and in no event shall an unbalanced or stale mix be re-tempered or used.
5. Mix all cementitious materials and sand in mechanical batch mixer for minimum of 5 minutes. Adjust consistency of mortar to satisfaction of mason but add only as much water as is compatible with convenience in using mortar. If mortar begins to stiffen from evaporation or from absorption of part of mixing water, re-temper mortar immediately by adding water, and remix mortar to restore its workability. Re-temper only within two hours of mixing.

- F. All mortar shall be used and placed in final position within two hours after mixing when air temperature is 80o F or higher and within three hours when air temperature is less than 80. Discard all mortar not used within these limits.

END OF SECTION

## SECTION 03350

### CONCRETE FINISHING AND CURING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section describes materials and methods of concrete finishes, curing, repair of defects, and surface protection.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Leakage Testing of Hydraulic Structures: Section 03051.
- B. Concrete Formwork: Section 03111.
- C. Concrete Joints, Water Stops, and Sealants: Section 03151.
- D. Concrete Reinforcement: Section 03205.
- E. Concrete: Section 03300.

##### 1.03 SUBMITTALS

- A. Submit shop drawings in accordance with the General Conditions and Section 01300.
- B. 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

##### 2.01 EPOXY BONDING COMPOUND

- A. See Section 03300.

##### 2.01 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.

## 2.03 MORTAR FOR REPAIR OF CONCRETE

- A. 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.

## 2.04 CLEAR FLOOR HARDENER (SURFACE APPLIED)

- A. 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.

## 2.05 BURLAP MATS

- A. Conform to AASHTO M182.

## 2.06 SISAL-KRAFT PAPER AND POLYETHYLENE SHEETS FOR CURING

- A. Conform to ASTM C171.

## 2.07 DUSTPROOF/SEALER (DPS):

- A. Manufacturers:
  - 1. Armorseal Rexthane 1 manufactured by Sherwin Williams.
  - 2. Duraguard 300HS manufactured by ChemMasters.
  - 3. Eucothane manufactured by the Euclid Chemical Company.
  - 4. Or acceptable equivalent product.
- B. Provide a high solid, single component, moisture cure urethane with VOC compliance.
- C. Provide surface primer in accordance with manufacturer's printed instructions.
- D. Colors to be selected by Engineer.

## PART 3 - EXECUTION

### 3.01 CONCRETE FINISHES

A. 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.

1. Finish F-1: Repair defective concrete, fill depressions deeper than 1/2 inch, and fill tie holes.
2. Finish F-2: Repair defective concrete, remove fins, fill depressions 1/4 inch or deeper, and fill tie holes.
3. 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.
4. 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.
5. Finish S-1: Screed to grade without special finish.

6. Finish S-2: Smooth steel trowel finish.
7. Finish S-3: Steel trowel finish free from trowel marks and all irregularities.
8. 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.
9. 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.
10. Finish E-1: Provide chamfer or beveled edges per Section 03111.
11. 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.

Curing Method	Area Permitted
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 per Section 09960.
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:

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:

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:

    - i. 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
    - ii. 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.

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 in accordance with Section 09940.

- 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

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## 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 as approved.

#### PART 2 - MATERIALS

##### 2.01 DESCRIPTION

The materials used shall conform with the requirements specified in the FDOT Standard Specifications for Road and Bridge Construction, latest edition. Specific references are as follows:

- |    |  |             |
|----|--|-------------|
| A. | Portland Cement (Types I, II or II)    | Section 921 |
| B. | Fly Ash, Slag and other Pozzolanic     |             |
|    | Materials for Portland Cement Concrete | Section 929 |
| C. | Fine Aggregate (Sand)*                 | Section 902 |
| D. | 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 cementitious 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 (or latest as approved by FDOT):

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

- 3.01 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.

### 3.02 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.

### 3.03 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 hand-held 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 FDOT approval.

END OF SECTION



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## SECTION 03420

### PRECAST REINFORCED CONCRETE STRUCTURES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Provide factory-built precast reinforced concrete underground structures as indicated and as specified.

##### 1.02 RELATED WORK:

- A. Section 02210: Earth Excavation, Backfill, Fill and Grading
- B. Section 03200: Concrete Reinforcement
- C. Section 03300: Cast-in-Place Concrete

##### 1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO: Standard Specifications for Highway Bridges.
- B. American Concrete Institute (ACI):
  - 1. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavy Weight, and Mass Concrete.
  - 2. ACI 301: Standard Specifications for Structural Concrete.
  - 3. ACI 304R: Guide for Measuring, Mixing, Transporting and Placing Concrete
  - 4. ACI 305R: Hot Weather Concreting
  - 5. ACI 306R: Cold Weather Concreting
  - 6. ACI 308: Standard Practice for Curing Concrete
  - 7. ACI 309R: Guide for Consolidation of Concrete
  - 8. ACI 318: Building Code Requirements for Structural Concrete and Commentary
- C. American Society for Testing and Materials (ASTM) Publications:
  - 1. ASTM A48: Specification for Sewer Manhole Frames and Covers

2. ASTM C31: Practice for Making and Curing Concrete Test Specimens in the Field
3. ASTM C33: Specification for Concrete Aggregates
4. ASTM C39: Test Method for Compressive Strength of Cylindrical Concrete Specimens
5. ASTM C143: Test method for Slump of Hydraulic Cement Concrete
6. ASTM C150: Specification for Portland Cement
7. ASTM C172: Practice for Sampling Freshly Mixed Concrete
8. ASTM C192: Practice for Making and Curing Concrete Test Specimens in the Laboratory
9. ASTM C231: Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
10. ASTM C260: Specification for Air-Entraining Admixtures for Concrete
11. ASTM C494: Specification for Chemical Admixtures for Concrete
12. ASTM C858: Specification for Underground Precast Utility Chambers
13. ASTM C1064: Test Method for Temperature of Freshly Mixed Portland Cement Concrete
14. ASTM D75: Practice for Sampling Aggregates

1.04 SUBMITTALS:

- A. Shop Drawings: Submit the following in accordance with Section 01300:
  1. Completely detailed shop drawings for all precast concrete structures. Indicate all dimensions, details, reinforcing steel, inserts, connections, openings, joint and opening seals, and lifting devices. Mark each component for identification. Show mark on erection plan and place legibly on unit at time of manufacture.
  2. Properly completed Certificate of Design as specified under Section 01300.
- B. Drawings of modifications or changes in features or details, which are necessitated by, design requirements. Make all such modifications without additional compensation.
- C. Do not fabricate precast concrete structures before shop drawings are accepted by the Engineer.

- D. A certificate of design shall be submitted to the Engineer prior to the production of the precast concrete structures. The certificate of design shall be signed and sealed by a Professional Structural Engineer employed by the structure manufacturer and holding current registration in the state in which the structure is to be installed.

1.05 QUALITY ASSURANCE:

- A. Provide in accordance with Section 01400 and as specified.
- B. Design Responsibility:
  - 1. Complete the Certificate of Design form in Section 01300 and submit to Engineer prior to manufacture of precast reinforced concrete structures.
  - 2. Submit the following support data along with Certificate of Design:
    - a. Certification signed and sealed by a Florida Professional Engineer employed by the structure manufacturer and holding current registration in the state in which the structure is to be installed stating that all elements and connections are designed to withstand required loads and forces.
    - b. Codes and specifications to which structural design conforms.
    - c. Do not submit calculations.

1.06 DELIVERY, STORAGE AND HANDLING:

- A. Provide in accordance with Section 01610 and as specified herein.
- B. Coordinate the delivery, storage, handling and installation of the concrete structures.
- C. Store structures on clean blocking, off the ground and protected from rain and ground splatter.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

- A. Oldcastle Precast, Inc.
- B. U.S. Precast Corp.
- C. Or equal.

## 2.02 MATERIALS:

- A. Concrete shall have a minimum concrete compressive strength of 5000 PSI at 28 days and shall conform to Section 03300.
- B. Steel reinforcement shall conform to ASTM A615, Grade 60.
- C. Portland cement shall be ASTM C150, Type II.
- D. Admixtures causing accelerated setting of cement in concrete shall not be used.
- E. Screened Gravel: As specified in Section 02223.
- F. Butyl rubber-based sealants shall conform to AASHTO M198, Type B but with no bitumen content.
- G. External heat shrink seal per details and specifications.
- H. Non-Shrink Grout:
  - 1. Masterflow 713 Grout by Master Builders, Cleveland, OH.
  - 2. Fire Star Grout by U.S. Grout Corp., Old Greenwich, CT.
  - 3. Upcon by Upcon Co., Cleveland, OH.
  - 4. Or equal.

## 2.03 PRECAST REINFORCED CONCRETE STRUCTURES:

- A. Design Criteria:
  - 1. Design precast reinforced concrete structure to withstand earth and groundwater loads. Groundwater elevation shall be assumed to be at the top of the structure. Provide design based on the following geotechnical information.

Depth (ft)	Soil Type	Density/Consistency	Frictional Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Lateral Earth Pressure Coefficients		
						Active, Ka	Passive, Kp	At Rest, Ko
0-12	Sand	Loose to Medium Dense	30	110	48	0.333	3.000	0.500
12-22	Rock	Soft	40	120	58	0.217	4.599	0.357
22-40	Sand	Medium Dense	32	115	53	0.307	3.255	0.470

- 2. Design precast reinforced concrete structure to withstand an H-20 vehicle loading with an impact factor of 1.3. Design shall account for vehicle positions both above and alongside structure including directly on each manhole cover.

3. Design precast reinforced concrete structure ceiling to withstand additional concentrated loads from lifting hooks located directly above each valve, meter or other equipment. Each lifting hook shall be capable of supporting the appropriate load, but not less than 2,500 pounds.
  4. Design and install structures to withstand hydrostatic uplift caused by a groundwater elevation at grade level or equal to the top of the structure, whichever produces the most severe condition. Use only the weight of the structure and hold-down slab to resist hydrostatic uplift with a minimum safety factor of 1.5. Do not include side friction of soil on walls.
  5. Walls and floor slab shall be a minimum of 8 inches in thickness. Cast lower wall section and floor slab together in one placement. Precast reinforced concrete structure roof shall be a minimum of 8 inches in thickness or as otherwise shown in the City's standard details.
- B. Provide precast reinforced concrete structure including structure wall, top and base slab thicknesses and required diameters as indicated on the drawings, details and per the City's standards and specifications. Structure shall be a complete watertight enclosure including sumps and entrance tubes as indicated.
- C. Fabricate precast reinforced concrete structure in sections as required for ease of installation and shipment.
- D. Provide pipe sleeves with water stops, rubber pipe boots or other devices at pipe penetrations as indicated.
- E. Manhole Frames and Covers:
1. Castings to be free from scale, lumps, blisters and sandholes.
  2. Machine contact surfaces to prevent rocking.
  3. Thoroughly clean and hammer inspect.
  4. Capable of withstanding AASHTO H-20 loading
- F. Bituminous Waterproofing Material:
1. H.B. Tnemecol 46-46S by Tnemec Company, Inc.
  2. Amercoat 78HB by Ameron International.
  3. Bitumastic 300M by Carboline.
  4. Or acceptable equivalent product.

G. Entrance Hatches:

1. Manufacturers:

- a. U.S. Foundry
- b. Bilco Co.
- c. Halliday
- d. Babcock-Davis Associates, Inc.
- e. Or equal.

2. Provide aluminum hatches of the type and size indicated and as follows:

- a. Fabricate hatch and frame with ¼ inch extruded aluminum frame and ¼ inch diamond checkered aluminum plate covers.
- b. Reinforce cover, with aluminum bars and angles welded to underside of covers, to withstand 300-lbs per square foot, unless AASHTO H-20-wheel loading indicated on drawings.
- c. Provide hatch with hinges, hold-open safety-lock bars and flush lift handles, factory assembled, and shipped complete for installation.
- d. Provide stainless steel hardware throughout. Hinge covers to frames with heavy duty stainless steel concealed hinges and stainless steel pins. Attach hinges to covers and frames with countersunk/flathead stainless steel machine screws. Covers shall fit flush to frame.
- e. Provide slam latch, flush mounted grip handle, and removable plug and key wrench.
- f. Provide ladder-up safety post.
- g. Provide Type 316 Stainless Steel safety chains.

H. Provide lifting hooks in the ceiling above pumps, valves and meters. Each hook shall have the capacity to hoist the equipment located below, but not less than 2,500 pounds).

I. Apply waterproofing to outside of walls, floor, and ceiling.

J. Provide aluminum access ladders as follows:

1. Fabricate from 1½ inch IPS, Schedule 80 aluminum pipe upright and 1 inch solid round aluminum rod rungs, mortised and welded to uprights. All welds shall be ground smooth. Tops of uprights shall be closed, sealed and ground smooth.
2. Space aluminum rungs 12 inches on centers.
3. Securely fasten ladder to entrance tube and precast reinforced concrete structures with aluminum brackets and ½ inch diameter stainless steel expansion bolts.
4. Ladders shall conform to OSHA Standards 29 CFR Chapter 1926.1053.

### PART 3 - EXECUTION

#### 3.01 PROTECTION:

- A. Protect aluminum from contact with dissimilar metals, concrete, masonry or mortar.
- B. Before coating application, clean contact surfaces, remove dirt, grease, oil, foreign substances, followed by immersing in, or wipe thoroughly with, an acceptable solvent. Rinse with clean hot water and dry thoroughly.

#### 3.02 FINISHES:

- A. Finishes: After fabrication, aluminum ladders and entrance tube hatches to receive an Aluminum Association Standard Anodic finish, Designation C22A31, followed by a shop coat of methacrylate lacquer.
- B. Damaged or worn coating of methacrylate lacquer shall be recoated with a new coating of lacquer of the same type.

#### 3.03 INSTALLATION:

- A. Install precast reinforced concrete structure, and related appurtenances in accordance with manufacturer's instructions.
- B. Place precast reinforced concrete structure onto level prepared bedding as indicated in details and specifications. Provide uniform bearing over entire base of structure.
- C. Seal all joints inside and out with specified sealant to ensure joints are waterproof.
- D. Repair or replace damaged waterproofing.
- E. Backfill structure excavation in such a manner so as not to damage the waterproofing.



3.04 CONTRACT CLOSEOUT:

- A. Provide in accordance with Section 01700.

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. 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.**
- F. 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.

### 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

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## **DIVISIONS 4 - 6**

**NOT USED**





## **DIVISION 7**

## **SEALANTS**





## SECTION 07920

### SEALANTS AND CAULKING

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. The CONTRACTOR shall provide caulking, sealing, and appurtenant work, complete and in place, in accordance with the Contract Documents.

##### 1.02 REFERENCE STANDARDS

- A. General: Portions of the following standards are incorporated into this Section by references below. The standards are listed here for convenience.
- B. Federal Specifications:
  - 1. TT-S-001543A - Sealing Compound, Silicone Rubber Base, (For Caulking, Sealing and Glazing in Buildings and Other Structures)
  - 2. SS-S-200D - Sealants, Joint, Two Compound, Jet Blast Resistant, Cold Applied for Portland Cement Concrete Pavement.
  - 3. TT-S-00227E - Sealing Compound, Elastomeric Type, Multi-Component, (For Caulking, Sealing and Glazing in Buildings and Other Structures).
  - 4. TT-S-00230C - Sealing Compound, Elastomeric Type, Single Component, (For Caulking, Sealing, and Glazing in Buildings and Other Structures)
- C. Commercial Standards:
  - 1. ASTM C 557 - Adhesives for Fastening Gypsum Wallboard to Wood Framing.
  - 2. ASTM C 834 - Latex Sealing Compounds.
  - 3. ASTM C 919 - Practice for Use of Sealants in Acoustical Applications.
  - 4. ASTM C 920 - Elastomeric Joint Sealants.
  - 5. ASTM C 1056 - Flexible Cellular Material-Sponge or Expanded Rubber.
  - 6. ASTM D 1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
  - 7. ASTM E 84 - Surface Burning Characteristics of Building Materials.

8. ASTM E 814 - Methods for Fire Tests of Through Penetrations: Firestops.
9. UL 1479 - Underwriter's Laboratory Standard for Safety Fire Tests of Through Penetrations Firestops.

#### 1.03 CONTRACTOR SUBMITTALS

- A. General: Submittals shall be in accordance with Section 01300 - Submittals.
- B. Technical Data: A complete materials list along with the manufacturer's technical data and literature, specifications, joint width and depth tables, and installation instructions.
- C. Samples: Samples (including color samples) of all the caulking and sealant materials and other materials proposed for use on the WORK. The samples shall be clearly marked with the manufacturer's name and product identification.
- D. Certificates: If requested by the ENGINEER, certificates from an independent testing laboratory approved by the ENGINEER, certifying that the submitted materials meet all the requirements of the ASTM and Federal Specifications cited.
- E. Warranty: A copy of the manufacturer's warranty covering all sealants, caulking materials, and other materials against defects in materials.

### PART 2 - PRODUCTS

#### 2.01 SEALANTS AND CAULKING MATERIALS

- A. General:
  1. Manufacturer's Standards: In addition to the standards listed below, the sealants and caulking products and application shall be in accordance with the manufacturer's published recommendations and specifications.
  2. Wherever manufacturer's names and products are listed in this Section, "or equal" products will be considered in accordance with Section 01300 - Submittals.
- B. Materials shall conform to the following requirements:
  1. Significant Movement Sealants (plus or minus 25% movement capability)
    - a. For expansion wall joints; masonry and metal curtainwall joints; precast concrete joints and concrete panels; perimeter sealing (windows, doors, and panels); control joints; interior and non-traffic horizontal joints.

- i. Two component, non-sag, polyurethane or polysulfide sealant conforming to Federal Specification TT-S-227E, Class A, Type II, and ASTM C 920, Type M, Class 25, Grade NS.
  - ii. One component, non-sag, low modulus, polyurethane or polysulfide sealant conforming to Federal Specification TT-S230C, Class A, Type II, and ASTM C 920, Type S, Class 25, Grade NS.
  - iii. One component, non-sag, medium modulus, neutral cure, silicone sealant conforming to Federal Specification TT-S-1543A, Class A, and ASTM C 920, Type S, Class 25, Grade NS.
- b. For horizontal joints not exposed to fuel spillage.
  - i. Two component, self-leveling, polyurethane or polysulfide sealant conforming to Federal Specification TT-S-227E, Class A, Type I, and ASTM C 920, Type M, Class 25, Grade P.
  - ii. Products Research & Chemical Corp. "RC-2SL"
  - iii. Bostic "Chem-Calk 550"
  - iv. One component, self-leveling, polyurethane or polysulfide sealant conforming to Federal Specification TT-S-230C, Class A, Type I, and ASTM C 920, Type S, Class 25, Grade P.
- 2. Preformed Sealants: Preformed sealant shall be polybutylene or isoprene-butylene based pressure sensitive weather resistant tape or bead sealant capable of sealing out moisture, air, and dust when installed as recommended by the manufacturer. At temperatures from minus 30 to plus 160 degrees F, the sealant shall be non-bleeding and shall have no loss of adhesion.
- 3. Tape sealant: Dimensions shall be as required for application conditions. Tape sealants shall be type recommended by tape manufacturer for connecting and bonding to surfaces.
- 4. Filler material shall be resilient, closed-cell polyethylene foam conforming to ASTM D 1752, Type II or III, and/or bond breakers of proper size for joint widths. Filler shall be compatible with sealant manufacturer's product and shall not stain the sealant nor the materials to which applied.
- 5. Primer: Primers shall be as recommended in the manufacturer's printed instructions for caulking and sealants and shall not stain the sealant nor the materials to which applied. Manufacturer shall be consulted for all surfaces not

specifically covered in submittal application instructions. Primer shall be used in accordance with manufacturer's instructions with all primers being applied prior to the installation of any backer rod or bond breaker tape.

6. Cleaning and cleanup solvents, agents, and accessory materials shall be as recommended in the manufacturer's printed instructions for cleaning up.

## 2.02 COLOR OF SEALANTS

- A. Color of sealants that are visible after installation shall match adjacent building finish. If in doubt of color match, obtain color approval from ENGINEER.

## 2.03 SUB-SLAB MEMBRANE

- A. Sub-slab membrane shall be 6-mil, odorless, nontoxic, polyethylene film without holes, complying with FHA requirements for below-slab moisture barrier, and shall be:
  1. Sisalkraft "Moisture-stop"
  2. Dampproof "XX"; or equal.

# PART 3 - EXECUTION

## 3.01 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials: Manufactured materials shall be delivered in original, unbroken packages or containers bearing the manufacturer's label. Packages or containers shall be delivered to the site with seals unbroken.
- B. Shelf Life: Materials whose shelf life dates have expired shall not be used in the WORK. Such materials shall be promptly removed from the project site.
- C. Storage: All materials shall be carefully stored in accordance with the manufacturer's instructions, in an area that is protected from deleterious elements, and in a manner that will prevent damage to the product. Materials shall be stored at temperatures between 40 and 90 degrees unless otherwise specified by the manufacturer.

## 3.02 INSTALLATION

- A. Manufacturer's Recommendations: All work under this Section and all testing, where applicable, shall be performed in accordance with manufacturer's printed recommendations, specifications, and installation instructions except where more stringent requirements are indicated herein; and, except where project conditions require extra precautions or provisions to assure performance of the waterproofing system.

- B. Authorized Installers: Caulking and sealants shall be complete systems and be installed only by installers authorized and approved by the respective manufacturers.
- C. Surface Preparation:
1. General: The surfaces of joints to be sealed shall be dry. Oil, grease, dirt, chalk, particles of mortar, dust, loose rust, loose mill scale, and other foreign substances shall be removed from surfaces of joints which will be in contact with the sealant. Ferrous metal surfaces shall be cleaned of all rust, mill scale, and other coatings by wire brush, grinding, or sandblasting. Oil and grease shall be removed by cleaning in accordance with sealant manufacturer's printed recommendations. Protective coatings shall be removed from all aluminum surfaces against which caulking or sealing compound is to be placed. Bituminous or resinous materials shall be removed from surfaces to receive caulking or sealants.
  2. Concrete and Masonry Surfaces: Where surfaces have been treated with curing compounds, oil, or other such materials, the materials shall be removed by sandblasting or wire brushing. Laitance, efflorescence, and loose mortar shall be removed from the joint cavity.
  3. Steel Surfaces: Steel surfaces to be in contact with sealant shall be sandblasted or, if sandblasting would not be practical or would damage adjacent finish work, the metal shall be scraped, and wire brushed to remove loose mill scale. Protective coatings on steel surfaces shall be removed by sandblasting or by a solvent that leaves no residue.
  4. Aluminum Surfaces: Aluminum surfaces to be in contact with sealants shall be cleaned of temporary protective coatings. When masking tape is used for a protective cover, the tape and any residual adhesive shall be removed just prior to applying the sealant. Solvents used to remove protective coating shall be as recommended by the manufacturer of the aluminum work and shall be non-staining.
  5. Wood Surfaces: Wood surfaces to be in contact with sealants shall be free of splinters and sawdust or other loose particles.
- D. Joint Types and Sizes: Joint shapes and sizes shall be as indicated or as necessary for job conditions where not indicated. Joints to be caulked or sealed include through-bolt holes, door frames, louver and ventilator frames, joints between openings where items pass through exterior walls, concrete masonry, or combination of these surfaces, and as otherwise indicated or required for water tightness, weatherproofing, or airtightness. Use sealing compound at both exterior and interior surfaces of exterior wall penetrations.

### 3.03 SEALANT FILLED JOINTS

- A. Sealant: Sealant shall be used before expiration of shelf life. Multi-component sealants shall be mixed according to manufacturer's printed instructions. Sealant in guns shall be applied with a nozzle of proper size to fit the width of joint. Sealant shall be installed to the required depth without displacing the backing. Unless otherwise indicated or recommended by the manufacturer, the installed sealant shall be tooled so that the surface is uniformly smooth and free of wrinkles and to assure full adhesion to the sides of the joint. Sealants shall be installed free of air pockets, foreign embedded matter, ridges, and sags. Sealer shall be applied over the sealant if recommended by the sealant manufacturer.
- B. Sealant Depth: Sealant depth in joints shall be 1/2 the width of joint, but not less than 1/8-inch deep and 1/4-inch wide nor more than 1/2-inch deep and 1-inch wide. All joints shall have a rigid filler material installed to proper depth prior to application of sealant.
- C. Masking Tape: Masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or sealant smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.
- D. Backing: Backing shall be installed to provide the indicated sealant depth. The installation tool shall be shaped to avoid puncturing the backing.
- E. Bond-Breaker: Bond-breaker shall be applied to fully cover the bottom of the joint without contaminating the sides where sealant adhesion is required.
- F. Primer: Primer shall be used on concrete masonry units, wood, or other porous surfaces in accordance with instructions furnished with the sealant. Primer shall be applied to the joint surfaces to be sealed. Surfaces adjacent to joints shall not be primed.
- G. Applications: A full bead of sealant shall be applied into the joint under sufficient pressure, with the nozzle drawn across sealant, to completely fill the void space and to ensure complete wetting of contact area to obtain uniform adhesion. During application, the tip of the nozzle shall be kept at the bottom of the joint thereby forcing the sealant to fill from the bottom to the top. Sealants shall be tooled immediately after exposure with a caulking tool or soft bristled brush moistened with solvent. The finished sealant-filled joint shall be slightly concave unless otherwise indicated.
- H. Acoustic Partition Joints: Acoustic partition joints shall be made air and sound-tight with acoustic caulking material.
  - 1. Partitions shall be sealed where indicated on the Drawings. Gypsum panels may have joint treatment applied in the normal manner over sealed joints, or panels may be finished with base or trim as required.

2. A 1/4-inch minimum round bead of sealant shall be applied around all cut-outs, such as at electrical boxes and air conditioning ducts, sufficient to seal the openings.

#### 3.04 SUB-SLAB MEMBRANE

- A. A sub-slab membrane shall be installed under floor slabs over which a finish flooring system will be installed and at other locations as indicated.

#### 3.05 CLEANING

- A. After application of sealant and caulking materials, adjacent materials which have been soiled shall be cleaned and left in a neat, clean, undamaged, or unstained condition. On porous surfaces, excess sealant shall be removed per sealant or caulking manufacturer's printed instructions.

END OF SECTION



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**DIVISION 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 Dry Inhibitive Primer 94-109 made by PPG Protective & Marine Coatings (4.0 – 6.0 DFT).

(4) Or acceptable equivalent product.

- #### 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



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## SECTION 09960

### HIGH PERFORMANCE COATINGS

#### PART 1 - GENERAL

##### 1.01 WORK OF THIS SECTION

- A. This section includes general repairs, coating and lining of newly installed pump/lift stations by a monolithic application of high-build, solvent-free UME (Urethane-Modified-Epoxy) hybrid epoxy system to eliminate infiltration/exfiltration, repair concrete voids, and provide corrosion protection as a total lining system. Procedures for surface preparation, cleaning, application and testing are described herein. Different repair methods and procedures are listed in this section. All structures scheduled for coating shall be cleaned, prepared, patched and/or sealed as required prior to the application of the hybrid epoxy system.

##### 1.02 SCOPE OF WORK

- A. The Contactor shall be responsible for furnishing all labor, supervision, materials, and equipment required to complete all lift station coating work, testing, surface repairs and lining in accordance with this Specification.
- B. All Sections of this Specification are mutually complimentary and the overall intent is that the Contractor shall provide for everything in his portion of the work required to make a complete and operable job in every respect unless specifically noted otherwise.
- C. It is the intent of this Specification to ensure that the work, as completed shall meet all applicable codes, ordinances, rules and regulations of every authority having jurisdiction in the area where the construction is located. Failure of the Contractor to point out items that do not meet such requirements does not relieve the Contractor or the Subcontractors of the responsibility of meeting them.
- D. All supplies shall be stored and maintained by the Contractor in accordance with manufacturer's recommendations. Materials shall not be exposed to adverse conditions prior to the work. All materials shall be kept in secured area and away from general public access. The Contractor shall review and maintain all Material Safety Data Sheets (MSDS), product labeling, and technical literature at the project site.

##### 1.03 REFERENCES

- A. The latest codes and standards referenced herein and belonging to the following organizations shall be followed:
  - 1. American Society for Testing and Materials (ASTM)

2. National Association of Corrosion Engineers, NACE International (NACE)
3. The Society for Protective Coatings (SSPC)
4. International Concrete Repair Institute (ICRI)
5. National Association of Sewer Service Companies (NASSCO)
6. EPA Environmental Technology Verification Program (EPA ETV)
7. American Association of State Highway and Transportation Officials (AASHTO)
8. Occupational Safety and Health Administration (OSHA)

#### 1.04 SUBMITTALS

##### A. Product Data

1. Technical data sheets on each product proposed shall be furnished. The technical data, by validation of ASTM testing results, shall demonstrate conformity with these specifications. If submitting an alternative product, please follow procedures set forth in Section 1.4 (C).
2. Material Safety Data Sheets (MSDS) for each product proposed shall be furnished.

##### B. Application Data

1. Project specific guidelines and recommendations.
2. Proof of any required federal, state or local permits and/or licenses.
3. Design details for any ancillary systems and equipment to be used on site for surface preparation, application and testing. Confined space entry, flow diversion and/or bypass plans shall be presented by Contractor to Owner as necessary to perform the specified work.
4. Applicator: Company specializing in performing work of this section with minimum one year documented experience and approved by manufacturer.
5. Three (3) recent references of Applicator indicating successful application of coating product(s) of the same or similar material type as specified herein, within municipal wastewater environments.

6. Written warranty:

- a. Materials and labor shall be warranted by the Contractor per Division 1, "General Requirements", from date of project completion, once correctly applied by an approved applicator and inspected.
- b. Contractor shall warrant with bond all workmanship of applied material systems per Division 1, "General Requirements", unless otherwise noted, from the date of final acceptance of the project.
- c. Failure will be deemed to have occurred if the protective system fails to:
  - i. Prevent the internal damage or corrosion of the underlying structure due to bacteriological, chemical, gaseous (hydrogen sulfide), erosive and abrasive attack, including internal damage or corrosion incurred from vibration and stress cracking. It does not include excessive atypical non-wastewater induced chemical abuse or atypical acts of God which cause structural damage.
  - ii. Seal and protect the substrate and environment from contamination by effluent.
  - iii. Seal and protect from influent.
- d. Contractor shall, within a reasonable time after receipt of written notice thereof, repair defects in materials or workmanship which may develop during said warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the Owner.

C. Or Equal Submittal

1. In order to be considered as an equal product, said product will have to meet the minimum physical and performance properties described herein as measured by the applicable ASTM standards referenced. Testing results must be performed and presented in the form of technical data sheets. Said product manufacturer must provide documentation supporting product's success and history in closed-wastewater-environments for at least ten (10) years.
2. Equal products' technical specifications/data and material safety data must be submitted to Owner a minimum of three (3) weeks prior to bid date. Samples of raw material and cured material must be submitted in order to cover at least one (1) square foot of surface.

3. Written product pre-approval is required to determine if the prospective product may be bid and utilized on this project. A product will be rejected as unacceptable should submittal to Owner not be received by the deadline and should the bid package not have enclosed a written approval from the Owner.

## PART 2 - COATING/LINING METHODS AND PROCEDURES

### 2.01 GENERAL

- A. All work shall be in strict accordance with the specifications and in accordance with manufacturer's directions, including application of all products.
- B. Contractor shall conform to all local, state and federal regulations including those set forth by OSHA, RCRA and the EPA and any other applicable authorities.
- C. When freezing temperatures are expected in the area, the Contractor shall take measures to keep applied materials warm and provide the required heat in the structure before repair work is started and the 24-hour period following application.
- D. Any inverts or flow channels shall be covered during construction operations to prevent loose materials from collection in the invert.
- E. Bypassing and/or blocking of the flow shall be done only with Owner's prior approval.
- F. The Owner shall supply water necessary for the project to the Contractor at no cost, from locations indicated by Owner prior to the start of the project. Contractor shall be responsible for transporting the water.
- G. It shall be the contractor's responsibility to provide traffic control and required by the particular location and/or jurisdiction.
- H. Use approved equipment designed, recommended and/or manufactured by the material supplier specifically for the application of all materials.
- I. Examine surface to receive coating. Notify Owners in writing if surfaces are not acceptable for coating.
- J. Applicator shall initiate and enforce quality control procedures consistent with applicable ASTM, NACE, and SSPC standards and the UME (Urethane-Modified-Epoxy) hybrid epoxy system manufacturer's recommendations.
- K. Products are to be kept dry, in a climate controlled environment, protected from weather and stored under cover.
- L. Products are to be stored and handled according to their material safety data sheets.

## 2.02 CLEANING AND PREPARATION

- A. The surfaces to be rehabilitated and lined shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the wall or bottom of the station.
- B. Surface preparation must achieve clean and sound concrete in accordance with SSPC-SP13/NACE No. 6 "Surface Preparation of Concrete." High pressure water cleaning or jetting, and/or pre-approved abrasive blasting may be necessary in order to achieve acceptable surface preparation free of all foreign material, laitance, oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, and/or other contaminants.
- C. When grease and oil are present within the structure, an approved detergent or degreaser may be used integrally with the high pressure cleaning water.
- D. All materials resulting from the cleaning shall be caught at the base of station and removed prior to applying specified coatings.
- E. All loose or defective brick, grout, ledges, steps and protruding ledges shall be removed to provide an even surface prior to application of coating.

## 2.03 SEAL ACTIVE LEAKS

- A. Stop active leaks with patching material or infiltration control materials applied according to manufacturer's recommendations.
- B. Materials
  - 1. Hydraulic cement
    - a. Quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug, which instantly stops running water and/or seepage through concrete.
  - 2. Chemical grout
    - a. Chemical grout material used for grouting active leaks shall be hydrophobic polyurethane or prior approved equal. Mixing and handling of all the chemical grout materials shall be in strict accordance with manufacturer's recommendations. Application of materials shall be by injection method only.

C. Execution

1. When leaks are not readily identifiable upon cleaning operation use blower to dry interior for positive identification of leaks and weep areas.
2. Infiltration control material shall be a rapid product specifically formulated for leak control to stop minor water infiltration and making repairs in concrete and brick structures, mixed and applied according to manufacturer's recommendations.
3. Hydraulic cement
  - a. The work consists of hand applying a dry quick-setting cementitious mix designed to instantly stop running water or seepage in all types of concrete and concrete structures. The certified applicator shall apply material in accordance with manufacturers' recommendations.
  - b. The area to be repaired must be clean and free of all debris.
  - c. Proper applications should not require any special mixing of product or special curing requirements after application.
4. Chemical grout
  - a. While being injected, the chemical sealant must be able to react/perform in the presence of water.
  - b. The cured material must withstand submergence in water, without degradation.
  - c. The resultant sealant (grout) formation must be impervious to water penetration.
  - d. The final sealant must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the sealant.
  - e. The final sealant formation must not be biodegradable.
  - f. Chemical grouting material final cure must not exceed one (1) hour.
  - g. Chemical grouting material must be compatible to other specified top and repair coating material and the final topcoat UME (Urethane-Modified-Epoxy) hybrid epoxy system. Any grouting material used, must be approved by the UME (Urethane-Modified-Epoxy) hybrid epoxy system manufacturer.

- h. All excess chemical grout must be removed from the surface via mechanical grinding means and top patched with Hydraulic cement.

## 2.04 CONCRETE CONDITIONING, FILLING AND REPAIR

- A. Concrete conditioning, filling and repair shall be performed to minimize the occurrence of outgassing and pin-holing. In addition, filling and repairs will be performed to remedy any deep spalls, voids, gaps, holes, or defects from form release, damage, impact, and other compromises.

- B. Materials

- 1. Conditioners/Primers

- i. To assist with the occurrence of outgassing. A manufacturer recommended concrete conditioner/primer may be utilized.
    - j. The material must set to cure within a 24 hour window to allow for coating.
    - k. The material must be a penetrating, epoxy-based conditioning coating, and/or a high density cementitious-based material designed to reduce out-gassing and provide a compatible base coat to assist with porous and pinhole resulting substrates.

- 2. Filling and repair

- a. The material is epoxy filler and patching material to fill in bug holes, spalled concrete, smooth deteriorated concrete surfaces.
      - i. Material must be epoxy based.
      - ii. Material must have excellent moisture tolerance, adhere to wet concrete and cure submerged in water.
      - iii. Material must be able to be a stand-alone system in the event that limitations of certain environments prevent the ability to topcoat. Therefore, filler and patching material must be able to withstand wastewater environments with similar chemical resistance expected of an epoxy structural topcoat.
      - iv. Filler and patching material must be compatible to other specified repair coating material and the final topcoat structural epoxy coating.



- v. Specified material(s) are listed below, or prior approved equal (see Section 1.4 C):

Epoxytec CPP Gel (#C311) by Epoxytec International, Inc.

Tel. - 1 (877) GO EPOXY

Fax -1 (954) 961-2395

- b. Concrete conditioning, filling and repair materials shall be in conformity to coating manufacturer recommendations.

#### C. Execution

##### 1. Conditioners/Primers

- a. The material thickness for conditioning the concrete in order to reduce the occurrence of outgassing will depend on the material recommended for the specific condition of the surface. Refer to manufacturer's published data for the material selected and recommended.

##### 2. Filling and repair

- a. Thickness is determined based on filling and patching voids to bridge sharps peaks and irregularities resulting from deteriorated concrete, spalls, cracks, bug holes in order to achieve an acceptable profile for the UME (Urethane-Modified-Epoxy) hybrid epoxy system to be applied. Use putty knife, spatulas and other trowel-applied tools as needed. Refer to manufacturer's published data for application specifics.

### 2.05 COATING/LINING

#### A. General

- 1. It is the intent of this specification to provide for the waterproofing and sealed corrosion protection of wet wells and similar underground structures by the safe, quick and economical application of a coating/lining system incorporating a 100% solids UME hybrid.

#### B. Materials

- 1. The UME hybrid epoxy coating system must be a hybrid epoxy exhibiting the following features:
  - a. The hybrid epoxy coating must be a urethane-modified-epoxy (UME).

- b. The hybrid epoxy coating must be self-priming, requiring no primer.
- c. The hybrid epoxy coating must adhere to concrete with adhesion testing results in PSI that outperformed the cohesion of concrete (CIGMAT CT-2/3).
- d. Hybrid epoxy coating must be moisture tolerant to moisture levels of concrete up to 90%.
- e. The hybrid epoxy coating must be able to react/perform in the presence of water.
- f. The hybrid epoxy coating must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the cure and performance properties.
- g. The hybrid epoxy coating must be able to be applied by brush, roller, or spray in order to have options in mobilization requirement and apply in limited access areas.
- h. The hybrid epoxy coating must hang with vertical and overhead thickness capability of 60 mils in one pass without sag.
- i. The hybrid epoxy coating must have an indefinite recoat window without preparation for simple repair requirements.
- j. The hybrid epoxy coating shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems, including severe hydrogen sulfide (up to 600ppm).
- k. The hybrid epoxy coating must have undergone testing and verified by the University of Houston's CIGMAT program for verification of technology exposed to underground sanitary sewer environments.
- l. The hybrid epoxy coating must be a modified epoxy (epoxide) coating system exhibiting elongation (ASTM D2370) of 30% (minimum) to 40% (maximum) to ensure properties which withstand movement, vibration, and access induced mechanical impact.

2. Approved material shall exhibit the following physical properties:

- a. Type hybrid, urethane-modified-epoxy
- b. Solids by Volume ASTM D2697 100%
- c. Solvent (VOC) ASTM D3960 none

- d. Adhesion Strength (concrete, dry) CIGMAT CT-2/3 substrate failure
  - e. Adhesion Strength (brick, wet) CIGMAT CT-2/3 substrate failure
  - f. Adhesion Strength (steel) ASTM D4541 1,500+ psi
  - g. Water Absorption ASTM D1653 < 0.1 g/sq.m.
  - h. Acid Exposure (pH 1, H2SO4) CIGMAT CT-1 passed
  - i. Tensile Strength ASTM D638 5,500+ psi
  - j. Flexural Modulus ASTM D790 55,000+ psi
  - k. Flexural Strength ASTM D790 8,000+ psi
  - l. Compressive Strength ASTM D695 7,000+ psi
  - m. Elongation ASTM D2370 30-40%
  - n. Complete Cure 18 hours (77F)
3. Specified material(s) are listed below, or prior approved equal (see Section 1.4 C):
- EpoxytecUroflex (#UME38) by Epoxytec International, Inc.
- Tel. - 1 (877) GO EPOXY
- Fax – 1 (954) 961-2395

C. Execution

- 1. Examination
  - a. All structures to be coated shall be readily accessible to the Applicator.
  - b. Appropriate actions shall be taken to comply with local, state and federal regulatory and other applicable agencies with regard to environment, health and safety.
  - c. Any active flows shall be dammed, plugged or bypassed as required to ensure that the liquid flow is maintained below the surfaces to be coated and that concrete to be coated has not reached moisture levels surpassing 90%. All extraneous flows into the structures at or above the area coated shall be plugged and/or diverted until the UME (Urethane-Modified-Epoxy) hybrid epoxy system has set hard to the touch.

- d. Temperature of the surface to be coated must be maintained between 65F and 110F during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Specified surfaces should be shielded to avoid exposure of direct sunlight or other intense heat source. Where varying surface temperatures do exist, coating installation should be scheduled when the temperature is falling versus rising.
- e. New Portland cement concrete structures shall have endured a minimum of 28 days since installation, prior commencing the conditioning, filling and repair, and coating installation.
- f. Prior to commencing surface preparation, Contractor shall inspect all surfaces specified to receive the coating and notify Owner, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.
- g. Allow at least 24 hours (77F) for all repair, filling, patching, and conditioning materials to cure prior to coating, unless otherwise stated by the manufacturer.

2. Hybrid epoxy coating

- a. If spraying, the spray equipment shall be specifically designed to accurately ratio and apply the specified hybrid epoxy coating materials and shall be regularly maintained and in proper working order.
- b. Top coating or additional coats of the hybrid epoxy coating should occur as soon as the prior coat becomes tacky to tack-free, but no later than the recoat window for the specified material(s). Additional surface preparation procedures will be required if this recoat window is exceeded.
- c. Follow all published and manufacturer recommended application methods. Properly mix and apply materials to all specified surfaces.
- d. Material thickness
  - i. For exterior buried conditions, the application shall cover all specified surfaces to a minimum DFT of 24-30 mils.
  - ii. As an interior liner, the application shall cover all specified surfaces to a minimum DFT of 40 mils.

## 2.06 QUALITY ASSURANCE AND ACCEPTANCE

- A. Surface preparation inspection must take place prior to proceeding to material applications. Applicator must record pH level, record psi level of water pressure and/or abrasive media type, and ICRI conditions and submit to coating manufacturer's representative or designated inspector.
- B. During application, Applicator shall regularly perform and record epoxy coating thickness readings with a wet film thickness gage, such as those meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, to ensure uniform thickness during application or other similar measuring probe.
- C. Applicator shall perform holiday detection on all surfaces coated with the UME epoxy coating in the presence of the coating manufacturer's representative or designated inspector. After the UME epoxy coating has set hard to the touch, surfaces shall first be dried. An induced holiday shall then be made onto the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99). All detected holidays shall be marked by the coating manufacturer's approved marking methods and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional epoxy coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations.
- D. A final visual inspection shall be made by the Applicator, coating manufacturer's representative or designated inspector. Any deficiencies in the finished coating shall be marked and repaired by Applicator according to the procedures set forth herein.

## PART 3 - EXECUTION (NOT USED)

END OF SECTION



## **DIVISION 10**

**NOT USED**





# **DIVISION 11**

# **EQUIPMENT**





## SECTION 11312

### COLLECTION SYSTEM BYPASS

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. The work covered by this Section consists of providing all temporary bypassing to perform all operations in connection with the flow of wastewater around pipe segment(s) or lift stations. The purpose of bypassing is to prevent wastewater overflows and provide continuous service to all wastewater customers. The Contractor shall maintain wastewater flow in the construction area in order to prevent backup and/or overflow and provide reliable wastewater service to the users of the wastewater system at all times. Temporary bypass is required at multiple locations through the project duration and will be based on phased construction, as necessary. In addition, noise attenuation, maintenance, MOT and permitting for bypass pumping operations will be required at no additional cost to the City.

#### PART 2- PRODUCTS

##### 2.01 GENERAL

- A. The Contractor shall provide and maintain adequate equipment, piping, bypassing, tankers and other necessary facilities and appurtenances in order to maintain continuous and reliable wastewater service in all wastewater lines as required for construction. Bypass pumping operation to be conducted by manned supervision 24 hours per day (including weekends) and backup emergency auto-dialer installed. The Contractor shall have tankers, backup pumps, linestops with bypass piping as needed, backup generators, plugs, piping and appurtenances ready to deploy immediately.
- B. Bypass pumps shall be skid mounted diesel pumps/systems as manufactured by Thompson Pumps, Godwin Pumps, Rain for Rent, or an approved equal.
- C. Blocked gravity lines shall include two (2) line stops, one (1) primary and one (1) redundant.
- D. Bypass equipment shall include discharge flow meter and multiple pressure gauges.
- E. Bypass plan/systems shall have complete redundancy and shall include one (1) back-up pump equal to the primary.

## PART 3- EXECUTION

### 3.01 GENERAL

- A. The Contractor shall have scheduled delivery of all materials, equipment and labor necessary to complete the repair, replacement or rehabilitation to the job site prior to isolating the gravity main segment, manhole, or pump station. The Contractor shall demonstrate that the pumping system is in good working order and is sufficiently sized to successfully handle flows by performing a test run for a period of 48 hours prior to beginning the work.

### 3.02 TRAFFIC CONSIDERATIONS

- A. The Contractor shall locate bypass pumping suction and discharge lines so as to not cause undue interference with the use of streets, private driveways, accessways, and alleys. This requirement may necessitate temporary trenching or bypass ramps. Ingress and egress to adjacent properties shall be maintained at all times. Ramps, steel plates or other methods shall be deployed by the Contractor to facilitate traffic over the bypass or surface piping. High traffic commercial properties may require alternate methods. The Contractor is required to provide maintenance of traffic (MOT) for all bypass piping operations including, but not limited to, permitting, approvals, fees and phased construction at no additional cost to the City.

### 3.03 BYPASS PLAN

- A. The Contractor shall submit a comprehensive written plan according to the submittal specifications, which describes the intended bypass for the maintenance of flows during construction. The Contractor shall also provide a sketch showing the location of bypass pumping equipment for each pump station or line segments around which flows are being bypassed. The plan shall include any proposed tankers, pumps, bypass piping, backup plan and equipment, linestops and bypass piping, ramps, work schedule, phasing, monitoring log for bypass pumping, noise attenuation, monitoring plan of the bypass pumping operation and maintenance of traffic plan. The Contractor shall cease bypass operations and return flows to the new and/or existing sewer when directed by the Owner. All piping shall be designed to withstand at least twice the maximum system pressure or a minimum of 50 psi, whichever is greater. During bypassing, no wastewater shall be leaked, dumped, or spilled in or onto, any area outside of the existing wastewater system. When bypass operations are complete, all bypass piping shall be drained into the wastewater system prior to disassembly.

### 3.04 BYPASS OPERATION

- A. The Owner shall review and provide written comments to the bypass plan prior to implementation of the bypass. The Contractor shall notify City operations 72 hours prior to commencement of bypassing and to allow time for coordination as necessary. The Contractor shall plug off and pump down the line segment in the immediate work area and shall maintain the wastewater system so that surcharging does not occur.

- B. The Owner shall accept the bypass plan prior to implementation of the bypass. Contractor will plug off and pump down the line segment in the immediate work area. A successful 3-day test period shall be performed during Owner work days (no weekends). If the Contractor is unable to isolate the system prior to installation of the temporary bypass connection, then a wet tap will be required at the expense of the Contractor.
- C. Where work requires the line to be blocked beyond NORMAL WORKING HOURS and bypass pumping is being utilized, the Contractor shall be responsible for on-site monitoring the bypass operation 24 hours per day, 7 days per week, by on-site personnel. Additionally, backup emergency auto-dialer installation is required.
- D. During bypassing, no wastewater will be leaked, dumped, or spilled in or onto, any area outside of the existing wastewater system.
- E. The Contractor shall insure that no damage will be caused to private property as a result of bypass pumping operations. The Contractor shall complete the work as quickly as possible and satisfactorily pass all tests, inspections and repair all deficiencies prior to discontinuing bypassing operations and returning flow to the sewer manhole, line segment, or lift station.
- F. The Contractor shall immediately notify the Owner should a sanitary sewer overflow occur, and the Contractor shall take the necessary action to clean up and disinfect the spillage to the satisfaction of the Owner and/or other governmental agency. If sewage is spilled onto public or private property, the Contractor shall wash down, clean up and disinfect the spillage to the satisfaction of the Owner and/or other governmental agency. When bypassing, complete redundancy is required. One back-up pump equal to the primary unit shall be required. Bypass pumps and motors shall have a maximum rating of 55 decibels at 20 feet for sound attenuation.
- G. Contractor shall provide secure temporary fencing around all bypass pumping equipment. Owner shall be given keys to access the bypass equipment.

### 3.05 CONTRACTOR LIABILITY

- A. The Contractor shall be responsible for all required pumping, equipment, piping and appurtenances to accomplish the bypass and for any and all damage that results directly or indirectly from the bypass pumping equipment, piping and/or appurtenances. The Contractor shall also be liable for all Owner personnel and equipment costs, penalties and fines resulting from sanitary sewer overflows. In addition to the aforementioned costs to be paid by the Contractor, a fine of \$5,000 per overflow occurrence or sanitary sewer disruption shall be assessed. For each 24-hour period following overflow that the wastewater overflow/damage is not completely cleaned, disinfected, and returned to full operational capacity an additional \$5,000 fine will be assessed daily. It is the intent of these specifications to require the Contractor to establish adequate bypass pumping as required regardless of the flow condition.

END OF SECTION

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**DIVISIONS 12 - 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 Model 975XL2U Reduced Pressure Principle Assembly with Union Ball Valves as manufactured by Zurn/Wilkins, or City approved equal. For other diameters, Contractor to submit shop drawings for approval. 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.  $\frac{3}{4}$ " 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.  $\frac{3}{4}$ " 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  $\frac{1}{2}$ " and  $\frac{3}{4}$ " 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 1/2" wide by 2 1/2" long x 1" deep with the longest dimension parallel to the longest axis. Lifting pin shall be stainless steel 1/4" 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 3/4" 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 1/4
MB38	23 1/4	13 3/4
MBDual	16 1/2	14 1/2

- 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.
- H. Fire hydrants are to have a grey body with a green cap.

## 2.30 BACTERIOLOGICAL SAMPLE POINTS

- A. Bacteriological sample points shall be provided in accordance to the Broward County Health Department Standard Details, Specifications Policies and Procedures for Water Distribution.
- B. Sampling point shall not be removed until approval is obtained from Broward County Health Department.

## 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 15008

### A-2000 PVC DRAINAGE PIPE

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

This specification includes materials, test methods and installation requirements for 8 to 36-inch diameter A-2000 POLYVINYL CHLORIDE (PVC) corrugated pipe (solid pipe) or perforated pipe (exfiltration trench pipe) with a smooth interior. The requirements of this specification are intended to provide pipe and fittings suitable for underground use in non-pressure applications such as storm sewers, drainage and underdrains.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02222 - Excavation and Backfill for Utilities
- B. Section 02751 – Storm Water System Cleaning and CCTV
- C. Section 02752 – Removal and Disposal of Material in Storm Water Piping
- D. Section 02730 – Gravity Sanitary Sewers

##### 1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

###### A. Commercial Standards:

ASTM F949	Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings
ASTM D1784	Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM D2412	Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading

##### 1.04 SUBMITTALS

- A. Shop Drawings: The CONTRACTOR shall submit shop drawings and laying diagrams of all A-2000 PVC pipe (solid or perforated), joints, bends, special fittings, and piping appurtenances in accordance with Section 01300, "Submittals".

- B. Certificates: The CONTRACTOR shall provide if requested, manufacturer's certificates for all materials indicating conformance to the Contract Documents.

#### 1.05 QUALITY ASSURANCE

- A. Testing: All materials testing will be based upon applicable ASTM Test Methods and AWWA Standards referenced herein for the materials specified.
- B. Certificates: Manufacturer's notarized certificates of compliance shall be furnished by the CONTRACTOR.
- C. The pipe shall be subjected to the specified hydrostatic strength tests, flexure tests, and crushing tests. The crushing tests shall be made on samples taken from the center of full-length sections of pipe.

#### 1.06 CLEANUP

- A. In addition to the requirements of Section 01700, "Project Closeout", the CONTRACTOR, upon completion of backfilling and grading over trenches shall remove all excess materials and equipment from the site.

### PART 2 - PRODUCTS

#### 1.07 GENERAL

- A. All pipe and fittings shall be Contech PVC A-2000 PVC Drainage Pipe Perforated Pipe or similar, pending City approval.
- B. PVC pipe and fittings shall be homogenous throughout and free from cracks, holes, foreign inclusions or other injurious defects.
- C. PVC pipe and fittings showing signs of ultra-violet degradation will not be accepted.

#### 1.08 PIPE

PVC corrugated pipe with a smooth interior shall conform to the requirements of ASTM designation F949. Pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. Pipe shall be manufactured to 46 psi stiffness when tested in accordance with ASTM test method dD2412. there shall be no evidence of splitting, cracking or breaking when the pipe is tested per ASTM Test Method D2412 in accordance with ASTM f949 section 7.5 and ASTM f794 section 8.5. The pipe shall be made of PVC compound having a minimum cell classification of 12454 as defined in ASTM specification d1784.

#### 1.09 JOINTS

All Joints shall be made with integrally-formed bell and spigot gasketed connections. The manufacturer shall provide documentation showing no leakage when gasketed pipe joints are tested in accordance with ASTM Test Method D3212. Elastomeric seals (gaskets) shall meet the requirements of ASTM Designation F477.

#### 1.10 FITTINGS

- A. All fittings for corrugated PVC sewer pipe with a smooth interior shall conform to ASTM F949, Section 5.2.3 or F794, Section 7.2.4. To insure compatibility, the pipe manufacturer shall provide all fittings..

#### 1.11 BEDDING MATERIAL

- A. Unless otherwise specified or shown, all material used for pipe bedding shall conform to the requirements of Section 02222, "Excavation and Backfill for Utilities".

### PART 3 - EXECUTION

#### 1.12 GENERAL

- A. All laying, jointing, testing for defects and for leakage shall be performed in the presence of the CITY, and shall be subject to the CITY'S approval before acceptance. All material found during the progress to have defects will be rejected and the CONTRACTOR shall promptly remove such defective materials from the site of the Work.
- B. Installation shall conform to the requirements of ASTM D 2321 and to the supplementary requirements or modifications specified herein. Wherever the provisions of this Section and the requirements of ASTM D 2321 are in conflict, the more stringent provision shall apply.

#### 1.13 TRENCHING AND BACKFILL

- A. Trench excavation and backfill shall conform to the requirements of Section 02222 - Excavation and Backfill for Utilities, and as specified herein.
- B. Unless otherwise specified or shown, the maximum width of trenches shall be as specified in said ASTM D 2321.

#### 1.14 LAYING PIPE

- A. The pipe shall be installed in accordance with the requirements of ASTM D 2321 and as specified herein. Sections shall be closely jointed to form a smooth flow line. Immediately before placing each section of pipe in final position for joining, the bedding for the pipe shall be checked for firmness and uniformity of surface.

- B. Proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions shall be provided and used by the CONTRACTOR for safe and efficient execution of the Work. All pipe, fittings, valves, and accessories shall be carefully lowered into the trench by means of backhoe, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.
- C. Cutting and machining of the pipe shall be accomplished in accordance with the pipe manufacturer's standard procedures for this operation. Pipe shall not be cut with a cold chisel, standard iron pipe cutter, nor any other method that may fracture the pipe or will produce ragged, uneven edges.
- D. The pipe and accessories shall be inspected for defects prior to lowering into the trench. Any defective, damaged or unsound pipe shall be repaired or replaced. All foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench. Pipe shall be kept clean during and after laying. All openings in the pipe line shall be closed with water tight expandable type sewer plugs or PVC test plugs at the end of each day's operation or whenever the pipe openings are left unattended. The use of burlap, wood, or other similar temporary plugs will not be permitted.
- E. Adequate protection and maintenance of all underground and surface utility structures, drains, sewers, and other obstructions encountered in the progress of the Work shall be furnished by the CONTRACTOR.
- F. Where the grade or alignment of the pipe is obstructed by existing utility structures such as conduits, ducts, pipes, branch connections to main sewers, or main drains, the obstruction shall be permanently supported, relocated, removed, or reconstructed by the CONTRACTOR in cooperation with owners of such utility structures.

#### 1.16 HANDLING

- A. Handling of the PVC pipe shall be done with care to insure that the pipe is not damaged in any manner during storage, transit, loading, unloading, and installation.
- B. Pipe shall be inspected both prior to and after installation in the ditch and all defective lengths shall be rejected and immediately removed from the working area.

#### 1.17 FIELD JOINTING

- A. Each pipe compression type joint shall be joined with a lock-in rubber ring and a ring groove that is designed to resist displacement during pipe insertion.
- B. The ring and the ring seat inside the bell shall be wiped clean before the gasket is inserted. At this time a thin film of lubricant shall be applied to the exposed surface of the ring and to the outside of the clean pipe end. Lubricant other than that furnished with the pipe shall not be used. The end of the pipe shall be then forced into the ring to complete the joint.
- C. The pipe shall not be deflected either vertically or horizontally in excess of the printed recommendations of the manufacturer of the coupling.
- D. When pipe laying is not in progress, the open ends of the pipe shall be closed to prevent trench water from entering pipe. Adequate backfill shall be deposited on pipe to prevent floating of pipe. Any pipe which has floated shall be removed from the trench, cleaned, and relaid in an acceptable manner. No pipe shall be laid when, in the opinion of the OWNER, the trench conditions or weather are unsuitable for such Work.

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".

- a. 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 established in Tables 13 through 20.
2. 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.
3. 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.
  - a. 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.
  - b. 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.
2. 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.
  - a. 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.

3. Mechanical Joint and Push-on Joint "Megalug®"-type Restraining Systems

- a. 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.
- b. 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.
- c. 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.
- d. 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.
- e. 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. EBAA no substitution.
- f. 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.

- g. 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.
- h. 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.

4. 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.
- 5. 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.
  - a. 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.
  - b. 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.
- 6. 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

##### Asphaltic Coating

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 "sandpaper" 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.

##### Cement-Mortar Lining

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".

## Ceramic Epoxy Lining and Polyethylene Lining

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.

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.

### Ceramic Epoxy Lining

1. 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.
2. 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:
  - a. A successful history of lining pipe and fittings for sewer service
  - b. 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:
    - i. 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.
    - ii. The material shall be an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment.
    - iii. 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".
    - iv. 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.
- 3. 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.

4. 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.

5. Inspection and Certification

a. Inspection:

- (1) 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.
- (2) The interior lining of all pipe and fittings shall be tested for pinholes with a nondestructive 2,500 volt test.
- (3) 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.

b. Certification

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.

Polyethylene Lining

1. 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.
2. 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.
3. 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.
4. 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 who's 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:

Manufacturers: Diamond Plastics Corp, JM Eagle, North American Pipe Corp (NAPCO). No substitutions allowed.

Date of manufacture - Manufacturer's name & Code

- Nominal size - Cell classification - "Type PSM

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.
- i. 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.

- ii. 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.
- iii. Nominal laid length of AWWA C900 and C905 PVC (CI) pipe shall be 20 feet.
- iv. 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).

- v. 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 provided 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 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.
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 ASNI B16.22, "Wrought Copper and Bronze Sold-er-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 (SDR) 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

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.

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.

- A. 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.

- B. 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)

- A. 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:

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 pipe lines 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:

All of the piping installed under this project shall be tested as follows and as directed by the Engineer:

1. 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.
2. 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 pipe lines shall be properly capped or plugged

during installation to keep dirt and other foreign material out of the system. Pipe supports and hangers shall be provided where indicated 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

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## SECTION 15068

### PVC FORCE MAIN

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section includes materials, installation, and testing of PVC force main conforming to AWWA C900. Size range is 4 through 12 inches.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Painting and Coating: 09900.
- B. Disinfection of Mains: UC-175.
- C. Piping and Fittings: 15060
- D. Cleaning and Testing Mains: UC-170.

##### 1.03 SUBMITTALS

- A. Submit shop drawings in accordance with the General Provisions.
- B. Provide affidavit of compliance with AWWA C900.
- C. Submit fully dimensioned cross-section of the bell and barrel of the pipe. Show the bell maximum outside diameter in the pressurized area and its minimum wall thickness at the same location.
- D. Submit copies of the following manufacturer-required tests conducted on project pipe:
  - 1. Quick-burst strength of pipe and couplings.
  - 2. Flattening resistance of pipe.
  - 3. Record of additional tests after test sample failure.
- E. Submit manufacturer's literature of gray iron and ductile-iron fittings including dimensions, thickness, weight, coating, lining, and a statement of inspection and compliance with the acceptance tests of AWWA C110 or C153. Submit copy of report of pressure tests for qualifying the designs of all sizes and types of AWWA C153 fittings that are being used in the project. The pressure test shall demonstrate that the minimum safety factor described in AWWA C153 is met.
- F. Submit outline drawings and materials description of service connection saddles, corporation stops, and pipe plugs.

- G. Submit test results for the restrained joint system to be used certified by an independent test laboratory demonstrating compliance with these specifications for each size and pressure rating.
- H. Submit restrained joint system installation instructions. Include bolt torque limitations and assembly tolerances.

#### 1.04 MANUFACTURER'S SERVICE

- A. Provide pipe manufacturer's services at the jobsite for the following minimum labor days, travel time excluded: One labor-day to instruct the Contractor's personnel in the preparation and execution of rubber-gasket and solvent-welded joints for the sizes of pipes to be installed in the project.

#### 1.05 MEASUREMENT AND PAYMENT

- A. Payment for the work in this section will be by the linear foot of each size of pipe (including fittings) of each pressure class measured horizontally.

### PART 2 - PRODUCTS

#### 2.01 PIPE

- A. Pipe 4-inches through 12 inches shall conform to AWWA C900, rubber-ring gasket bell end or plain end with elastomeric gasket coupling, DR 18 or as shown in the drawings, cast iron equivalent outside diameter, material cell classification 12454 per ASTM D1784, latest revision.

#### 2.02 FITTINGS

- A. Fittings shall conform to AWWA C153, latest revision or AWWA C110, latest revision.

#### 2.03 LINING AND COATING FOR FITTINGS

- A. Line and coat fittings with fusion-bonded epoxy.

#### 2.04 FLANGES

- A. Flanges on outlets of fittings shall be Class 250 per ASME B16.1.
- B. PVC flanges shall be of the one-piece solid socket design and shall be made of the same material as the pipe. Manufacturer's pressure rating shall be at least 250 psi at a temperature of 73°F. Minimum burst pressure shall be 500 psi. Flanges shall match the dimensions of ASME B16.5, Class 250, steel flanges for outside diameter, bolt circle, and bolt holes. Do not use Van Stone flanges.

## 2.05 OUTLETS AND NOZZLES

- A. For outlets larger than 2 inches, use a Ductile Iron tee with a flanged or MJ outlet.

## 2.06 RESTRAINED JOINTS

Provide restrained joints where indicated in the drawings. Restrained joints shall be provided by restraining systems that incorporate a wedge restraint on the restraint ring to provide positive restraint.

- A. Restraint devices for bell-and-spigot joints shall consist of a split restraint ring installed on the spigot, connected to a solid backup ring seated behind the bell.
- B. Restraining Glands shall be EBAA Iron Series 2000 and 1600 or approved equal.
- C. The ASTM A536 ductile iron casting of the restrained gland shall be bonded powder coated. The wedge and wedge assembly shall have a bonded liquid polymer coating applied for corrosion protection. The gland shall utilize torque limiting twist off wedge actuation screws.
- D. T-bolts, studs, and connecting hardware shall be high-strength, low alloy material in accordance with AWWA C111.
- E. Design restraining devices to have a 2:1 safety factor based on the design strength of the pipe.

## 2.07 FLANGED COUPLING ADAPTERS See Section 15065.

## 2.08 WYE STRAINERS

PVC wye strainers shall be manufactured of the same material as the pipe, with 30- mesh screens and Viton seals. Connecting ends shall be the socket type, solvent welded. Provide one spare screen for each strainer.

# PART 3 - EXECUTION

## 3.01 PRODUCT MARKING

Legibly mark pipe at 5-foot intervals and each coupling to identify the nominal diameter, the outside diameter base, that is, cast-iron or steel pipe (IPS), the material code for pipe and couplings, the dimension ratio number, AWWA C900, and the seal of the testing agency that verified the suitability of the material for potable water service (NSF).

## 3.02 DELIVERY AND TEMPORARY STORAGE OF PIPE

- A. Ship, store, and place pipe at the installation site, supporting the pipe uniformly. Avoid scratching the pipe surface. Do not stack higher than 4 feet or with weight on bells. Cover to protect from sunlight.

- B. Do not drag PVC pipe over the ground, drop it onto the ground, or drop objects on it.
- C. Store loose pipes on racks with a maximum support spacing of 3 feet. Provide shades for pipe stored outdoors or installed outdoors until the pipe is filled with water. Store fittings indoors in their original cartons.
- D. Store solvent cement indoors or, if outdoors, shade from direct sunlight exposure. Do not use solvent cements that have exceeded the shelf life marked on the storage container.

### 3.03 HANDLING PIPE

- A. Hoist pipe with mechanical equipment using a cloth belt sling or a continuous fiber rope that avoids scratching the pipe. Do not use a chain. Pipes up to 12 inches in diameter may be lowered by rolling on two ropes controlled by snubbing. Pipes up to 6 inches in diameter may be lifted by hand.

### 3.04 INSTALLING BURIED PIPING

- A. Bedding material and backfill to 1 foot above the pipe for PVC shall be Type 1 backfill with a max rock size of  $\frac{3}{4}$ -inch compacted in 6-inch lifts. The minimum trench width shall be the pipe width plus 24-inches (12-inches on each side).
- B. Before installation, check pipe and fittings for cuts, scratches, gouges, buckling, kinking, or splitting on pipe ends. Remove any pipe section containing defects by cutting out the damaged section of pipe.
- C. Do not install PVC pipe when the temperature is below 40°F or above 90°F.
- D. Do not install pipe that is gouged or scratched forming a clear depression.
- E. Install in accordance with AWWA C605, and as follows.
  - 1. When installing pipe in trenches, do not deviate more than 1 inch from line or  $\frac{1}{4}$  inch from grade. Measure for grade at the pipe invert.
  - 2. Backfill materials in the pipe zone shall be imported sand per Section 02315. Do not add successive layers unless the previous layer is compacted to 90% relative compaction per ASTM D1557.
  - 3. Compact material placed within 12 inches of the outer surface of the pipe by hand tamping only.
  - 4. Compact trench backfills to the specified relative compaction. Do not float pipe. Do not use high-impact hammer-type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe.

### 3.05 PIPE LAYOUT FOR CURVED ALIGNMENT

- A. Complete curves using straight pipe, and effecting deflection at the joint. Pipe lengths may not be bent for curved alignment.

### 3.06 ASSEMBLY OF RUBBER-GASKET PIPE JOINT

- A. The spigot and bell or bell coupling shall be dirt free and slide together without displacing the rubber ring. Lay the pipe section with the bell coupling facing the direction of laying.
- B. Insert the rubber ring into the groove in the bell in the trench just before joining the pipes. First clean the groove. Observe the correct direction of the shaped ring. Feel that the ring is completely seated.
- C. Lubricate the spigot over the taper and up to the full insertion mark with the lubricant supplied by the pipe manufacturer. If the lubricated pipe end touches dirt, clean the pipe end and reapply lubricant.
- D. Insert the spigot into the bell and force it slowly into position.
- E. Check that the rubber ring has not left the groove during assembly by passing a feeler gauge around the completed joint.

### 3.07 FIELD HYDROSTATIC TESTING

- A. Test pressures are shown in Section UC-170. Test in accordance with Section UC-170.

END OF SECTION

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## 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:
- C. ANSI B16.5                      Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
- D. ANSI/ASME B31.1            Power Piping
- E. ASTM A 36                      Specification for Structural Steel
- F. ASTM A 48                      Specification for Gray Iron Castings
- G. ASTM A 126                    Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
- H. ASTM A 536                    Specification for Ductile Iron Castings
- I. ASTM B 61                      Specification for Steam or Valve Bronze Castings

J.	ASTM B 62	Specification for Composition Bronze or Ounce Metal Castings
K.	ASTM B 148	Specification for Aluminum-Bronze Castings
L.	ASTM B 584	Specification for Copper Alloy Sand Castings for General Applications
M.	ANSI/AWWA C500	Gate Valves for Water and Sewerage Systems
N.	ANSI/AWWA C502	Dry-Barrel Fire Hydrants
O.	ANSI/AWWA C503	Wet-Barrel Fire Hydrants
P.	ANSI/AWWA C504	Rubber-Seated Butterfly Valves
Q.	ANSI/AWWA C507	Ball Valves 6 Inches Through 48 Inches
R.	AWWA C508	Swing-Check Valves for Waterwork Service, 2 Inches Through 24 Inches NPS
S.	ANSI/AWWA C509	Resilient-Seated Gate Valves for Water and Sewage Systems
T.	ANSI/AWWA C511	Reduced-Pressure Principle Backflow-Prevention Assembly
U.	AWWA C550	Protective Interior Coatings for Valves and Hydrants
V.	SSPC-SP-2	Hand Tool Cleaning
W.	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 counterclockwise 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:
  - 1) All phases of the power supply shall be monitored. The contractor shall open de-energizing the motor upon detection of single phasing.
  - 2) 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:
  - 1) 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.
  - 2) 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.
  - 3) 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.
  - 4) Open/close push-button for local manual operation (modulating service).
  - 5) Position indicator calibrated to 0-100 percent travel span.
  - 6) 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

- 1) LOCAL/REMOTE selector
- 2) OPEN/CLOSE pushbuttons
- 3) Position set-point potentiometer/indicator
- 4) LOCAL accepts local position set-point
- 5) OPEN/CLOSE indication
- 6) Fault (torque) indication

Remote operation

- 1) REMOTE - accept a remote 4-20 mA position set-point
- 2) Position transmitter 4-20mA signal to RTU (Remote Transmitter Unit)
- 3) Available Ready of Auto to RTU
- 4) 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 centerline.

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 valve 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. Lunkheimer Flow Control;
  - 4. Wm. Powell Company;
  - 5. Worcester Controls;
  - 6. Valve Primer Corporation.

#### 2.09 CHECK VALVES

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 pieces 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:

- A. Tapping Sleeves - See Section 15102 – Tapping Sleeves and Tapping Valve.
- B. Tapping Valves – Refer to Gate Valves in Section 2.04.C above.

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

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## SECTION 15102

### TAPPING SLEEVES AND TAPPING VALVES

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. The Contractor shall furnish and install tapping sleeves and tapping valves, as shown on the Plans and/or as specified herein. All items not specifically mentioned in these specifications or noted on the Drawings, but which can be reasonably inferred as necessary to make a complete working installation, shall be included.
- B. Tapping sleeves, where shown on the Plans, shall fit the existing pipe to be tapped and the Contractor shall determine the outside diameter and type of pipe before ordering the sleeve. Contractor must field verify dimensions, locations, distances and elevations before ordering tapping sleeves. The Contractor shall adjust his work to conform to said field conditions.
- C. Only tapping sleeves shall be used for tapping existing mains to connect new mains. Tapping saddles will not be permitted.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 15060 - Piping and Fittings
- B. Section 15001 - Water Services and Miscellaneous Fittings

##### 1.03 MANUFACTURE

- A. All valves shall be the products of domestic manufacturing firms which have been regularly engaged in the production of valves for at least 5 years. All valves specified herein shall be tested at the factory in accordance with the AWWA Standard Leakage and Hydrostatic Test as modified herein and a certified test report shall be furnished for each valve.

##### 1.04 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for all tapping sleeves and valves.
- B. For all AWWA valves, submit an affidavit stating the valves and all materials used in their construction conform to the applicable requirements of AWWA C500 as modified herein, that all specified tests have been performed and all test requirements have been met.

## PART 2 - PRODUCTS

### 2.01 TAPPING SLEEVES

- A. Tapping sleeves shall be of cast iron construction except as specified below, shall be full-bodied and shall be designed to withstand a working pressure of at least 150 psi.
- B. The tapping sleeves, including outlet flanges shall be as dimensioned and thicknesses shall be as required by AWWA/ANSI C110/A21.10. The tapping sleeves shall be mechanical joint ended, on the run, and shall have a connecting flange outlet, with centering groove (for all valves size 12-inch and below and for valves above 12-inch if available from the manufacturer), for connecting to the tapping valve. For tapping sleeves with outlets 12 inches and smaller, the connecting flange joint between the tapping sleeve and the tapping valve shall be in compliance with all applicable provisions of MSS Standard Practice SP60, latest revision, as developed and approved by the Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street N.E. Vienna, VA. 22180. For tapping sleeves with outlets larger than 12 inches, the connecting flange must provide a matching fit with tapping valves by other manufacturers.
- C. Each mechanical joint on the tapping sleeve shall be furnished complete with tee-head bolts and nuts complying with ANSI/AWWA C111/A21.11, "Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings" (latest edition). Tee-head bolts and hex nuts shall be of high strength cast iron. Bolts and nuts to join the two halves of the sleeve together shall be A-316 stainless steel, hex, or tee-head bolts and nuts.
- D. Each tapping sleeve shall be furnished complete with all necessary split end gaskets, longitudinal gaskets and two-piece (split) steel glands (follower glands held in place by set screws not acceptable). Gasket shall be shipped separately in suitable protective containers. Material for split end gaskets shall conform to ANSI/AWWA Standard C111/A21.11. Material for longitudinal gaskets shall be rubber conforming to ANSI/AWWA Standard C111/A21.11.
- E. The sleeves shall be suitable for use with ductile iron pipe conforming to ANSI/AWWA Standard C151/A21.51, "Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids", with wall thickness and outside diameter as specified in Table 51.4 and 51.5. The sleeves shall also be suitable for use with other cast iron pipe with differing outside diameters and other types of pipe where required.
- F. The City will permit the use of the PowerSeal Pipeline Products Corp. 3490MJ Mechanical Joint tapping sleeve as an approved equal to ductile iron flange-outlet tapping sleeves. This unit has a mechanical joint branch outlet tapping connection which mates with a standard resilient-seated gate valve rather than the tapping flange x mechanical joint ends required by the standard design of tapping sleeves. These units shall be manufactured of Type 304 (18-8) Stainless Steel per ASTM A240, with MJ outlets fabricated of Type 304 (18-8) Stainless Steel per ANSI 21.11. Bolts and nuts shall be made

of A-316 Stainless Steel and meet ASTM requirements. A-316 stainless steel hex nuts shall be furnished with fusion bonded coating to prevent seizing and galling. Gaskets shall be SBR for potable water use, or Neoprene, EPDM, or Nitrile for sanitary sewer use.

## 2.02 TAPPING VALVE

- A. See Specification Section 15001 - Water Services and Miscellaneous Fittings

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Where shown on the approved plans, the Contractor shall install the tapping sleeves and valves of the indicated size, without taking existing main out of service. Under no circumstances shall be Contractor be permitted to tap these existing mains. The Contractor shall pressure test the tapping sleeve and valve after installation on the main, but prior to tapping operations. The test shall be conducted in the presence of the City's Inspector. No leakage will be permitted at any joint in either the tapping sleeve or tapping valve. Taps shall be made by tapping specialists with credentials acceptable to the City.
- B. Tapping valves 16-inch and smaller require the installation of a cast iron or C900 PVC riser pipe, complete with ductile iron valve box and cover, centered over the operator and set in concrete. Tapping valves 16-inch and larger shall be installed in a horizontal position with the operator in the vertical position with valve box over the operator and set in concrete.
- C. Where a tapping valve with by-pass gate valve will be installed, the Contractor shall install a valve box over the main valve and a valve box over the by-pass valve. 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 5-¼" locking lid, or approved equal.
- D. The tapping sleeve and valve shall be installed complete, and the work shall include all necessary excavation, including interlocking sheeting and shoring, backfilling and compaction, surface repairs, and sheeting and shoring outside of the main trench line, dewatering, testing the sleeve and valve, supporting tapping by City forces, constructing the concrete thrust anchor and all other appurtenant items and work. Installation of tapping sleeve shall be in accordance with City of Hollywood Public Utilities Department Standard Details, Specifications Policies and Procedures for Water Distribution.

- E. Prior to ordering the tapping sleeve, the Contractor shall excavate and field-verify the type and outside diameter of the main.

### 3.02 TAPS

- A. The Contractor shall comply with all applicable provisions of Subsections 3.01 above, including installation and pressure testing of tapping sleeve and tapping valve in the presence of the City's Inspector.
- B. Since cutting equipment used for this type of installation is of a special design, the Contractor shall make provisions for furnishing a tapping specialist to perform actual tapping operation. The qualifications of the tapping specialist shall be forwarded to the City prior to any tapping work. The Contractor shall also furnish all incidental equipment necessary to operate the tapping machine.
- C. The tapping valve shall be installed in the horizontal position with the operator in the vertical position, and shall include a valve box cover. Tapping valves shall be left in the closed position.
- D. When the invert of the tapping valve is under water, interlocking sheeting and tremie concrete shall be used, unless otherwise approved by the City. Seal the perimeter of all pipes passing through the sheeting below the water table. Only minimum seepage will be permitted. The cofferdam must be designed and sealed by a State of Florida, P.E. No work will be permitted within the cofferdam until it is demonstrated to the City to be dry. Approval to remove the initial water in the cofferdam must be obtained from the City and other governmental agencies having jurisdiction over the work.
- E. All tapping operations shall be conducted under the direct supervision of City of Hollywood Utility Inspector or Engineer. All operations shall have prior approval of the City.

### 3.03 RECORD DRAWINGS

- A. Record Drawing shall be prepared in accordance with Section 01300
- B. The location and elevation for each valve, tapping flange outlet, fitting, service line and other appurtenances along the pipeline shall be recorded by the Contractor's Florida Registered Land Surveyor.

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

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## 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
  - 1. ANSI / AWWA B300 Hypochlorites
  - 2. ANSI / AWWA B301 Liquid Chlorine
  - 3. 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 Department 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:

$$L = \frac{S \cdot D \cdot \sqrt{P}}{148,000}$$

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.
- H. Take one bacteriological sample and test from every segment of pipeline tested. Samples shall be taken and tested on each of two successive days. 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.
- I. The Contractor shall be responsible for coordination with Broward County Department of Health, who shall collect and test samples from main. The Contractor shall provide assistance to the Dept. of Health for the collection of samples. The samples shall be taken from each main or section of main to be placed in service where designated by the Dept. of Health. The samples must be approved by the Department of Health before the main is placed in service.
- J. The Contractor shall be responsible for any rechlorination and retesting that may be required until the Department of Health'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.

### 3.05 BACTERIOLOGICAL ANALYSES

- A. Provide analysis of treated water to meet standards and received acceptance from the Broward County Health Department.
- B. Test samples in accordance with AWWA C601.
- C. Quality Assurance: Testing Laboratory: Certified for examination of drinking water in compliance with applicable legislation of the State of Florida.
- D. Regulatory Requirements: Conform to Chapter 17-22 of the Florida Administrative Code.
- E. Submittals
  - 1. Submit name of testing laboratory and evidence of qualification.
  - 2. Submit three copies of reports.
- F. 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

- A. Manufacturer's product data for polyethylene tubing
- B. 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

## SECTION 15998

### CATHODIC PROTECTION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Section includes requirements for a complete sacrificial cathodic protection system for pipelines.

##### 1.02 QUALITY ASSURANCE

- A. Materials:
  - 1. Following applicable Standards for corrosion control.
  - 2. Supplied by manufacturer regularly engaged in production of corrosion control materials.
- B. Installer: Install test stations, insulating joints, anodes, and joint bonding under supervision of corrosion control technician or corrosion engineer experienced in corrosion control work.
- C. Corrosion Control Testing: NACE International Certified Corrosion Specialist, Senior Corrosion Technologist, or corrosion engineer with at least 5 years of experience in corrosion engineering to perform corrosion control testing.

##### 1.03 SUBMITTALS

- A. Submit per Section 01300 - Submittals.
  - 1. Catalog Data.
    - a. Materials to be used for joint bonding, joint insulating, anodes, and reference cells.
    - b. Thermite weld packages, including manufacturer's recommended cartridge and charge size for each application required.
  - 2. Catalog Data or Shop Drawings: Test stations.
- B. Quality Assurance/Control Submittals.
  - 1. Certificates:
    - a. Installer's qualifications.

- b. Corrosion control tester's qualifications, methods, and procedures for testing corrosion control system, including description of equipment and instruments to be used.

## PART 2 - MATERIALS

### 2.01 MATERIALS

#### A. Wire

- 1. Bonding Wire: #2 or #4 AWG stranded copper wire rated at 600 volts with black high molecular weight polyethylene (HMWPE) insulation, length as shown on Standard Details.
- 2. Test Lead Wires: #6 through #12 AWG stranded copper wire rated at 600 volts with THW, THHN, THWN, or HMWPE insulation. Wire sizes and insulation colors following Standard Details.
- 3. Anode Header Wire: Stranded copper wire with black HMWPE insulation using #8 AWG for multiple galvanic anode installation and #4 AWG for impressed current anodes, unless otherwise noted on Drawings; length as required.

#### B. Exothermic (Thermite) Weld Materials

- 1. Thermite Weld Molds, Weld Powder, and Weld Metal Cartridges: Proper size and amounts for wire size, pipe size, and pipe material.
- 2. Approved Manufacturers.
- 3. Exothermic weld material:
  - a. ERICO Products Inc.
  - b. Continental Industries.
  - c. Or equal
- 4. Ductile Iron Pipe:
  - a. ERICO, Weld Metal Powder for Cast Iron 45 X F19.
  - b. Or equal.
- 5. Thermite weld caps:
  - a. Royston Handy Caps (caps pre-filled with mastic).
  - b. Thermite weld caps (empty caps to be field-filled with mastic).
  - c. Or equal

C. Terminations and Terminals

1. Wire Terminations for Bolted Connections: One piece bar lugs made of electrolytic grade copper bar stock and tin plated, assembled or fabricated before field delivery.
2. Approved Manufacturers.
3. Terminals for Terminating Test Lead Wires in Test Boxes: One piece, burr-free, crimp-type, non-insulated brazed seam terminals made of annealed electrolytic copper, sized to match various wire and stud sizes.

D. Protective Coating Materials

1. Exothermic Welds: Bituminous, coal tar, petroleum wax, or petrolatum-based mastic or tape and primer.
2. Approved Manufacturers:
  - a. Royston Laboratories.
  - b. Tapecoat Company.
  - c. Trenton Corporation.
  - d. Denso Incorporated.
  - e. Central Plastics Company.

E. Insulating Materials

1. Flange Insulating Kit.
2. Flange Insulating Gasket: Full flange diameter, Type E, made of laminated phenolic with neoprene on each side of gasket with minimum total thickness of 1/8 inch.
3. Dielectric strength: Not less than 500 volts per mil.
4. Compressive strength: Not less than 24,000 psi.
5. Water absorption: Maximum 2.5%.
6. Approved manufacturers/suppliers:
  - a. Advance Products & Systems, Inc.
  - b. Central Plastics Company.
  - c. Pipeline Seal and Insulator, Inc. (PSI).
  - d. Or equal.
7. Insulating Flange Bolt Sleeves: High density polyethylene or spiral wrapped Mylar with dielectric strength not less than 1,200 volts per mil.

8. Insulating Flange Bolt Washers: High strength phenolic with minimum thickness of 1/8 inch, dielectric strength not less than 500 volts per mil, and compressive strength not less than 25,000 psi.
9. Steel Flange Bolt Washers for Placement over Insulating Washers: Minimum thickness of 1/8 inch and cadmium plated.
10. One Piece Combination Sleeve and Washer:
11. Only as noted on Drawings.
12. When noted, 1 piece sleeve and washer of molded acetal or nylon resin having minimum thickness of 1/8 inch.
  - a. Dielectric strength not less than 500 volts per mil.
  - b. Compressive strength not less than 15,000 psi.
13. Copper House Connections and Small Pipe Insulator.
  - a. Copper house connection insulator: Two brass parts and nylon dielectric bushing.
  - b. Insulator for other pipe 2 inch and smaller diameter: One piece threaded bushing made of nylon and sized to fit pipe.

F. Test Stations

1. Flush Mounted
  - a. Tube: Following Standard Details.
  - b. Cast iron or high impact plastic collar with ribs.
  - c. Cast iron or high impact plastic locking lid: Blue with permanent identification marking "WSSC Test Station" to withstand AASHTO H-20 traffic loads and ultra violet rays.
2. Above Ground
  - a. Weatherproof enclosure: Cast aluminum, galvanized steel, or high impact plastic, Lexan, Gyrlyn or equal.
  - b. Test box enclosure with locking waterproof cover: Fasten on pipe using non- rusting materials: stainless steel, galvanized steel, or cadmium plated steel fasteners.
  - c. Terminal block: Phenolic resin, plastic, micarta, Lexan, or Bakelite high dielectric material, with 7 terminals unless otherwise shown on Drawings.



- d. Terminals: Nickel plated brass 1/4 inch threaded studs, nuts, and washers.
- e. Shunt: 0.01 ohm with minimum of 6 ampere capacity in test stations with galvanic anodes following Drawings.

G. Reference Electrodes

1. Zinc Reference Cell: Zinc bar in prepackaged backfill with test lead wire.
2. Contents: High purity zinc, 99.99 percent pure, meeting requirements of ASTM B418, Type II.
3. Size: Approximately 1.4 inches by 1.4 inches by 9 inches and weigh approximately 5 pounds.
4. Prepackaged Backfill:
  - a. 75 percent ground hydrated gypsum.
  - b. 20 percent powdered bentonite.
  - c. 5 percent anhydrous sodium sulfate.
  - d. In water permeable fabric sack with zinc bar centered in sack, weighing not less than 20 pounds.
5. Lead Wire: No. 12 AWG, 600 volts stranded copper wire with THW, THWN, or THHN green insulation, at least 25 feet long and silver soldered or exothermically welded to core of zinc bar.
6. Copper to Copper Sulfate Cell: In plastic tube in prepackaged backfill with test leadwire, with accuracy of  $\pm 5$  millivolts and minimum design life of 15 years.
7. Contents: High purity copper element, 99.99 percent pure, inside a tube containing a super saturated solution of copper sulfate.
8. Prepackaged Backfill:
  - a. 75 percent ground hydrated gypsum.
  - b. 20 percent powdered bentonite.
  - c. 5 percent anhydrous sodium sulfate.
  - d. In water permeable fabric sack with zinc bar centered in sack, weighing less than 20 pounds.

9. Lead wire: No.12 AWG, 600 volts stranded copper wire with THW, THWN, or THHN red insulation, at least 25 feet long and crimped and soldered or brazed to copper element.

H. Anodes

1. Magnesium bar in prepackaged backfill with test lead wire, in weights following Drawings.
2. Chemical Composition of Magesium Anodes: Percent by weight.

<u>Standard</u>	<u>High Potential</u>	
Aluminum	5.0-7.0	0.010 Max.
Zinc	2.0-4.0	0.05 Max.
Manganese	0.150 Min.	0.50-1.30
Copper	0.100 Max.	0.020 Max.
Silicon	0.300 Max.	0.05 Max.
Iron	0.003 Max.	0.030 Max.
Nickel	0.003 Max.	0.001 Max.
Others	0.300 Max.	0.050 each or 0.300 Max Total.
Magnesium	Balance	Balance

3. Prepackaged Backfill:
    - a. 75 percent ground hydrated gypsum.
    - b. 20 percent powdered bentonite.
    - c. 5 percent anhydrous sodium sulfate.
    - d. In water permeable fabric sack with anode centered in sack.
  4. Lead wire: No. 12 AWG 600 volts solid copper wire with THW, THWN, or THHN white insulation, at least 15 feet long, and factory connected to core with silver brazing alloy with minimum silver content of 15 percent.
- I. Detectable Warning Tape: Yellow Mylat encased aluminum foil, minimum of 6 inches wide, with imprinted words "CATHODIC PROTECTION."

### CALCULATED RESISTANCE TABLE

Diameter in Inches	DUCTILE IRON PIPE	
	Class	Resistance per Foot (OHM)
4	51	0.0000762
4	52	0.0000688
4	53	0.0000628
4	54	0.0000578
4	55	0.0000536
4	56	0.0000500
6	51	0.0000486
6	52	0.0000441
6	53	0.0000404
6	54	0.0000373
6	55	0.0000346
6	56	0.0000323
8	50	0.0000380
8	51	0.0000343
8	52	0.0000313
8	53	0.0000288
8	54	0.0000266
8	55	0.0000248
8	56	0.0000233
10	50	0.0000287
10	51	0.0000261
10	52	0.0000239
10	53	0.0000221
10	54	0.0000205
10	55	0.0000192
10	56	0.0000180
12	50	0.0000225
12	51	0.0000206
12	52	0.0000190
12	53	0.0000176
12	54	0.0000164
12	55	0.0000154
12	56	0.0000145
14	50	0.0000182
14	51	0.0000167
14	52	0.0000155
14	53	0.0000144
14	54	0.0000135

**CALCULATED RESISTANCE TABLE (Cont'd.)**

14	55	0.0000127
14	56	0.0000119
16	50	0.0000155
16	51	0.0000143
16	52	0.0000132
16	53	0.0000123
16	54	0.0000115
16	55	0.0000109
16	56	0.0000103
20	50	0.0000118
20	51	0.0000109
20	52	0.0000101
20	53	0.0000095
20	54	0.0000089
20	55	0.0000084
20	56	0.0000079
24	50	0.0000093
24	51	0.0000087
24	52	0.0000081
24	53	0.0000076
24	54	0.0000071
24	55	0.0000067
24	56	0.0000064
30	50	0.0000073
30	51	0.0000066
30	52	0.0000061
30	53	0.0000056
30	54	0.0000052
30	55	0.0000049
30	56	0.0000046
36	50	0.0000055
36	51	0.0000050
36	52	0.0000045
36	53	0.0000041
36	54	0.0000038
36	55	0.0000035
36	56	0.0000033
42	50	0.0000043
42	51	0.0000039
42	52	0.0000035
42	53	0.0000032

**CALCULATED RESISTANCE TABLE (Cont'd.)**

42	54	0.0000029
42	55	0.0000027
42	56	0.0000025
48	50	0.0000035
48	51	0.0000031
48	52	0.0000028
48	53	0.0000025
48	54	0.0000023
48	55	0.0000021
48	56	0.0000019
54	50	0.0000028
54	51	0.0000025
54	52	0.0000022
54	53	0.0000020
54	54	0.0000018
54	55	0.0000017
54	56	0.0000015

Joint Bond Wire Resistances

#2AWG Wire	0.000162 OHM Per Foot
#4AWG Wire	0.000259 OHM Per Foot

**PART 3 - EXECUTION**

**3.01 THERMITE WELDING OF WIRES**

- A. Thermite weld test lead and joint bond wires to ductile iron and steel pipe joints and fittings, except where limited use of lugs is permitted following Standard Details.
  - 1. This weld process may be specified for use on other metallic structures.
- B. Select and use thermite welding equipment following equipment manufacturer's instructions and Standard Details.
  - 1. Use equipment and molds to accommodate wire size, metallic structure's shape, wire position of attachment (vertical or horizontal) and other criteria specified.
  - 2. Before a mold is used, remove and clean slag, dirt, and other foreign matter from mold.
  - 3. Use cartridge and charge size based on manufacturer's recommendations for specific application.
  - 4. Different charges are required for steel and ductile iron. polyethylene.

C. Surface Preparation:

1. Surface with Little or No Coating:
  - a. Cleaned to bare metal by grinding or filing area approximately 3 inches square to produce bright metal surface.
  - b. Removed of coating, dirt, mill scale, oxide, grease, moisture, and other foreign matter from weld areas.
2. Surfaces with High Performance or Thick Coating: Cut 4 inch square window through coating and clean 3 inch square of surface to bright metal, avoiding damage to surrounding coating.

D. Preparation for Welding

1. Before welding, remove wire insulation as required to fit mold, avoiding damage to exposed copper wire.
2. If wire is cut or nicked over half way through its diameter, cut off and strip new end.
3. If manufacturer requires use of copper sleeve, crimp it securely to wire and remove excess wire protruding from end of sleeve.

E. Test Connection

1. After charge is set, remove mold and slag from weld area with welder's hammer.
2. Strike top and sides of weld with hammer to test secureness of connection.
3. If weld does not hold, remove scrap weld material, clean, and begin weld process again.
4. After welding and before coating cleaned weld area, Engineer may test joint bond wires for electrical continuity.

F. Weld Caps

1. When weld passes test for soundness and electrical continuity, repair coating in weld area with petrolatum or petroleum wax mastic and weld cap placed over weld following Standard Details.
2. Apply mastic to fill weld cap or pre-filled weld cap and cover exposed metal of structure and wire to minimum thickness of 1/4 inch.
3. Repair damage to coating around weld area following coating manufacturer's recommendations.

4. If weld cap will not fit due to physical space limitations, coat bare metal and wire in weld area with minimum 1/4 inch thickness of petrolatum or petroleum wax mastic.

### 3.02 BOLTED WIRE CONNECTIONS

- A. Bolted wire connections for bonding purposes are permitted to bolts on valve body: Follow Standard Details and specified herein.
- B. Connect wire to bolt on valve body that is closest to pipe centerline.
  1. After valve bolt is removed, clean valve surface under bolt head to bright metal.
- C. Use prefabricated bar lug on bonding wire end that will connect to valve bolt.
  1. Size bar lughole to fit valve bolt, and make bolted connection following Standard Details.
  2. After bolted wire connection is completed, test joint bond wires for electrical continuity.
  3. After bond wire passes electrical continuity test, coat bar lug, exposed copper wire and valve metal cleaned to make connection with minimum 1/4 inch of petrolatum or petroleum wax mastic.

### 3.03 JOINT BONDING OF PIPE

- A. Bond pipe joints and fittings to form electrically continuous pipeline following Drawings and Standard Details.
- B. Wire.
  1. Size wire used for joint bonding according to pipe diameter and following Standard Details.
  2. Cut bond wire to shortest length practicable, including some slack, for given span.
    - a. Locate bond wire welds on pipe and fittings following Standard Details.
    - b. Horizontal welds are preferable, but where there is insufficient space on fitting, vertical welds will be permitted.
    - c. Where multiple parallel bond wires are involved, space wires neatly and without wires crossing each other.
3. Do not splice bond wires.
  - a. Entirely replace bond wires broken during construction.
  - b. Reweld loose weld connections.

4. If insulation of bond wire is damaged between welds, repair insulation:
  - a. Thoroughly clean damaged area and 6 inches either side of it.
  - b. Wrap minimum of 1 overlapping layer of rubberized electrical tape around damaged area and extend at least 2 inches each side.
  - c. Wrap 2 overlapping layers of plastic electrical tape around rubberized tape and extend at least 1 inch beyond rubberized tape at each end.

#### 3.04 INSULATED JOINTS

- A. Install insulated joints of type and at location following Drawings and Standard Details.
- B. After insulated joint is completed, test and verify that joint is completely insulated.
  1. Coat entire joint including bolt ends and nuts with coating material specified herein.
  2. Fully coat minimum of 12 inches on each side of flange.
  3. Clean surface of flange and components and prepare surface following manufacturer's recommendations.
  4. Apply uniform coat of primer to flange and all components.
  5. Apply filler mastic to all irregular surfaces of flange to provide smooth profile for tape application.
  6. Apply innerwrap to flange and all components in spiral fashion; minimum overlap 55 percent.
  7. Apply outerwrap to flange and all components in spiral fashion; minimum overlap 1 inch with sufficient tension to provide continuous adhesion of tape.
  8. Install test facilities at insulated flanges following Drawings.
- C. For copper house connections and other small pipe, install connection insulator following Drawings.
  1. Locate insulator at copper pipe tie-in following Standard Details



### 3.05 INSTALLATION OF TEST STATIONS

#### A. Location of Test Stations

1. Follow Drawings and Standard Details.
  - a. Unless otherwise directed by Engineer, locate surface of concrete pad at finish grade.
2. Identify test station with number following Drawings or Engineer furnished number.
  - a. Paint number legibly inside test box lid or cover and on terminal block.
  - b. Use permanent and weatherproof paint for metal or plastic surfaces.
3. Immediately after installation in areas to be improved, protect and identify test station locations with 3 stakes extending at least 4 feet above existing grade, equally spaced around test station and wrapped with orange fluorescent flagging material within 6 inches from top of stakes.
4. Situate pipe for pipe mounted test stations directly over pipeline.
  - a. If this is not possible, locate at Engineer's direction.

#### B. Test Lead Wires

1. Install test lead wires without splices as shown on Standard Details and attach to pipe using exothermic welding method.
2. Terminate test lead wires inside test box using proper sized crimp type connectors on wire ends.
  - a. Connect each wire to terminal maintaining at least 18 inches slack in each wire at test station.
  - b. Neatly coil slack wire in test station below terminal board.
3. Locate wires on top and along pipe and at right angles to pipeline when wires depart for offset test stations.
  - a. Protect wires from damage during backfilling operations with adequate slack and support.
4. Place continuous yellow detectable warning tape directly over test lead wires, 12 inches to 18 inches below finished surface.

5. Test each lead wire for continuity after backfill is completed.
  - a. If test for continuity fails, repair or replace at Engineer's direction.
  - b. After continuity is verified, connect each lead wire to terminal block in test station.
- C. Reference Cells:
  1. Install reference cell following Standard Details or Drawings.
  2. Protect cloth sack with prepackaged backfill surrounding reference cell from tearing or damage.
  3. If damage occurs, provide new prepackaged reference cell.
  4. Test wire from reference cell for proper function.
    - a. If reference cell is not functioning properly, repair or replace.
    - b. After test cell is functioning properly, connect lead wire from reference cell to terminal block at test station.
    - c. Do not attach other test lead wire to terminal that is used for reference cell.
- D. IR Drop Lead Wires:
  1. Locate IR drop test stations following Drawings. Use wire size, type, and length following Standard Details.
  2. Locate long lead wires below springline of pipe and taped to pipe for protection, following drawings.
- E. Foreign Pipeline:
  1. Provide test stations at foreign pipelines following Drawings and Standard Details.
  2. Notify owner of foreign pipeline at least 2 weeks before test station construction. Unless otherwise indicated only foreign pipeline owner or approved representative will be permitted to weld wires to foreign pipeline.

### 3.06 ANODE INSTALLATION

- A. Locate anodes as shown on Drawings and Standard Details.
  - 1. Do not lift anode by lead wire.
  - 2. Protect cloth sack with prepackaged backfill surrounding anode from tearing or damage.
  - 3. If damage occurs, provide new prepackaged anode.
  - 4. After anode is in place, backfill around it with rock-free material and compact following Restoration Schedule on Drawings.
  - 5. After backfill is completed to at least 1 foot above anode, pour at least 15 gallons of water over anode, unless groundwater covers it.
- B. Connect anode lead wire to terminal block at test station, or when shown on Drawings, directly to pipe by exothermic weld.

### 3.07 PLACING SYSTEM IN SERVICE

- A. Accomplish final connections and place Cathodic Protection System in service specified under Corrosion Control Testing.

### 3.08 CORROSION CONTROL TESTING

- A. Record methods and instruments used to perform required tests including all readings, measurements, and calculated resistances.
- B. Minimum Equipment To Perform Corrosion Control Testing:
  - 1. DC ammeter with full scale ranges of 1, 10, and 100 amperes, accurate to within 1 percent of full scale. A millivolt meter with 1 percent of full scale accuracy and shunts may also be used.
  - 2. Voltmeter with minimum input resistance of 10 megohms, with DC low range of 200 millivolts full scale to DC high range of 100 volts full scale and accurate to within 1 percent of full scale.
  - 3. Alternative to 1. and 2. above may be high impedance multi combination voltmeter- ammeter used with 100 ampere shunt, Miller B3A, or equal.
  - 4. DC power supply with steady capacity of 50 amperes minimum, produced from portable cathodic protection rectifier, 6 or 12 volt automotive type wet cell batteries, or equal.

5. Test leads and clamps suitable for carrying test current, rated up to 75 amperes with lead wire length.
  6. Adjustable resistors with sizes and capacities to handle desired outputs.
  7. Safety switch rated for test current.
  8. One pair of electrical probes for voltmeter.
  9. Saturated copper-copper sulfate reference half cell.
- C. Continuity testing.
1. Submit records of joint bond resistance testing including:
    - a. Instruments and equipment used, with sketch of test connections.
    - b. Test amperages, voltages, and voltage changes during testing.
    - c. Joint resistance, measured and calculated.
    - d. Location of each test station, giving pipe station and street address
  2. Calculate theoretical joint and bond resistances.
    - a. Measure distance between test stations.
    - b. Using Calculated Resistance Table included herein at end of Section, multiply measured distance by Resistance Per Foot (OHM) from table to obtain theoretical (or calculated) resistance.
    - c. Measured resistance shall not exceed 10 percent of calculated resistance.
- D. Test each insulating joint after assembly and prior to backfilling for insulation, using methods generally accepted in corrosion control engineering. Repair or replace defective or ineffective insulating joint.
1. Submit records of insulated joint testing including:
    - a. Test method and instruments used, with sketch of test connections.
    - b. Location readings of current, voltage, and calculated resistance.

E. After Backfill is Completed and Test Stations are in Place:

1. Test and verify continuity and electrical isolation of pipeline.
2. Measure pipe-to-soil potentials in close interval over-the-line survey, continuously at electrode spacing not to exceed 5 feet. Relate contact points of reference electrodes to pipeline stations and known pipeline appurtenances.
3. Make sketch of each test station terminal board and test lead wire hookups.
4. Make plan view sketch of each test station location with physical features and GPS coordinates as follows: Horizontal Control--MD State Plane Coordinates NAD83/91 to 0.01 foot accuracy, Vertical Control--NGVD29 to 0.01 foot accuracy.

F. For Pipeline with Cathodic Protection System, perform following:

1. Before anode connection:
  - a. Close interval pipe-to-soil potential survey.
  - b. Pipe-to-soil potential at each test station.
  - c. Reference cell-to-pipe potential at each test station.
  - d. IR drop calculations (K factor).
  - e. IR drop measurements - current flow and direction.
  - f. Anode potential.
2. At time of anode connection:
  - a. Connect anodes to an appropriate test lead wire and shunt in each test station.
  - b. Pipe-to-soil potential at each test station.
  - c. Reference-to-pipe potential at each test station.
  - d. IR drop measurements - current flow and direction.
  - e. Anode current output.
3. Three to 4 weeks following anode connection (i.e., cathodic protection system activation):
  - a. Close interval pipe-to-soil potential survey.
  - b. Pipe-to-soil potential at each test station.
  - c. Reference cell-to-pipe potential at each test station.

- d. IR drop measurements - current flow and direction.
  - e. Anode current output
- G. For Pipeline without Cathodic Protection System, perform following:
  - 1. Close interval pipe-to-soil potential survey.
  - 2. Pipe-to- - current flow and direction.
- H. At stations where foreign structures are interconnected, check for stray current.
  - 1. If stray current is revealed, identify source, if possible, and inform Engineer of findings.

#### PART 4 - MEASUREMENT AND PAYMENT

- A. Measurement: By each complete in place.
- B. Payment: At unit price for each as listed in Bid Schedule.
- C. Payment includes provisions to provide test stations, including but not limited to, joint bonding, insulating joints, lead wires, anodes and other necessary components to complete corrosion control system.

END OF SECTION



**DIVISION 16**

**NOT USED**







# **APPENDICES**





# **APPENDIX A**

# **GEOTECHNICAL** **REPORTS**



September 6, 2017

**TETRA TECH**

450 North Park Road, Suite 502  
Hollywood, Florida 33021

Attention: Christopher A. Zavatsky, P.E

Re: Letter Report of Geotechnical Engineering Services  
**Replacement of Water Mains**  
Hollywood, Florida | PSI Project No. 0397-1242

---

Dear Mr. Zavatsky:

**Professional Service Industries, Inc. (PSI)** has completed a shallow subsurface investigation and pavement cores evaluation in connection with the above-referenced project. These services were provided in general accordance with our proposal No. 0397-201386 dated July 27, 2016. This report presents a generalized description of the encountered soil profiles, detailed and graphic logs of fifty-eight (58) soil borings and photographs of ten (10) pavement cores performed along Pembroke Road and Hollywood Boulevard.

**PROJECT INFORMATION**

It is our understanding that the proposed project consists of the replacement of water mains along multiple roadways bounded by the following limits shown in **Figure 1**:

1. From Hollywood Boulevard to Washington Street and from US-441 to SW 56<sup>th</sup> Avenue.
2. From Washington Street to Pembroke Road and from US-441 to SW 52<sup>nd</sup> Avenue.

We understand the watermains along US-441 will not be replaced. Similarly, the area occupied by the existing shopping plaza and parking areas at the southeast corner of US-441 and Hollywood Boulevard (extending approximately 1900 feet south of Hollywood Boulevard. and 1200 feet east of US-441) will not be replaced. We also understand that for the most part, the watermains will be installed by conventional cut and cover techniques.

If any of the aforementioned information is incorrect or has changed, please notify PSI so that we may amend this letter, if appropriate.

### **FIELD TESTING**

A total of ten (10) 6-inch diameter pavement core samples were obtained to determine the asphalt thickness along Pembroke Road and Hollywood Boulevard. Seven (7) of the ten (10) pavement cores were performed along Pembroke Road. The remaining three (3) cores were performed along Hollywood Boulevard. The approximate locations where the pavement cores were performed are shown on **Figure 2 and Figure 3**. The thicknesses of the asphalt pavement core samples performed along Pembroke Road range from approximately 9.25 to 10.75 inches. Similarly, the asphalt pavement thicknesses of the core samples performed along Hollywood Boulevard range from approximately 8.0 to 13.5 inches. It should be noted that the asphalt pavement thickness was only measured at the boring/core locations, and therefore they may not be representative of the overall asphalt pavement thickness of the subject roadway alignments. Photographs of the above-referenced asphalt pavement cores are included on the attached **Figure 4 through Figure 13**.

A total of fifty-eight (58) Standard Penetration Test (SPT) borings to a depth of approximately 8 feet below existing grades were performed at the approximate locations shown on the attached **Figure 2 and Figure 3**. The results of the SPT borings are shown on the attached **Boring Logs**. Please note that all depths discussed below refer to depths below existing grade at the time of our field investigation.

The soil profiles encountered below the asphalt pavement along the proposed project alignments generally consisted of approximately 0.5 feet to 2 feet of medium dense to very dense limerock fill (GP-GM) followed by 2 to 4 feet of loose to medium dense, fine to medium sand (SP) with occasional traces of limestone. Below the upper sandy stratum, the natural limestone formation was encountered extending to the boring termination depth of approximately 8 feet. Borings RB-27 and RB-28 disclosed loose to medium dense silty fine sands (SM) between depths ranging from approximately 2 to 4 feet.

Please note that contractors should anticipate high resistance during excavation activities as the natural limestone formation was encountered as shallow as 2 feet below grade within borings RB-20, RB-26 and RB-39 and near 3 feet below grade in borings RB-1 through RB-5. Special equipment and breaking tools may be required during excavation work, installation of well points (if required for dewatering) and associated earthwork activities due to the encountered shallow limestone formation.

The groundwater table was observed in twelve (12) of the fifty-eight (58) SPT borings at depths ranging from approximately 7.5 to 7.8 feet below existing site grades at the time of drilling (August 2017). It should be noted that groundwater levels fluctuate seasonally in response to rainfall and the infiltration rate of the soil. Therefore, at a time of year different from the time of drilling, there is a possibility of a change in the recorded levels.

We estimate that during the peak of the wet hydroperiod with rainfall and recharge at a maximum, groundwater levels at the site could be one to two feet higher than those reported herein. We recommend that the contractor determine the actual groundwater levels at the time of construction to assess groundwater impact on the construction procedure.

Please refer to the individual boring logs presented in **Appendix A** for details on the groundwater conditions observed at the specific exploration locations.

### CLOSURE

Our professional services have been performed in accordance with generally accepted geotechnical engineering principles and practices at the time of this letter. This company is not responsible for the conclusions, opinions or recommendations made by others based on this data. No other warranties are implied or expressed.

The scope of our services did not include an environmental assessment for the presence or absence of hazardous or toxic materials in the soil and groundwater. Any statements in this letter regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

We trust this letter and the accompanying attachments are adequate for your current needs; however, should you have any questions or should additional information be required, please do not hesitate to contact our office at (305) 471-7725.

Respectfully Submitted,

**PROFESSIONAL SERVICE INDUSTRIES, INC.**

Certificate of Authorization No. 3684

Morgan Dickinson, P.E.  
Regional Engineer/Principal Consultant  
FL License No. 97557

### **ATTACHMENTS**

- Figure 1: Site Vicinity Map
- Figure 2-3: Field Testing Location Plan
- Figure 4-13: Pavement Cores Photographs  
Boring Logs

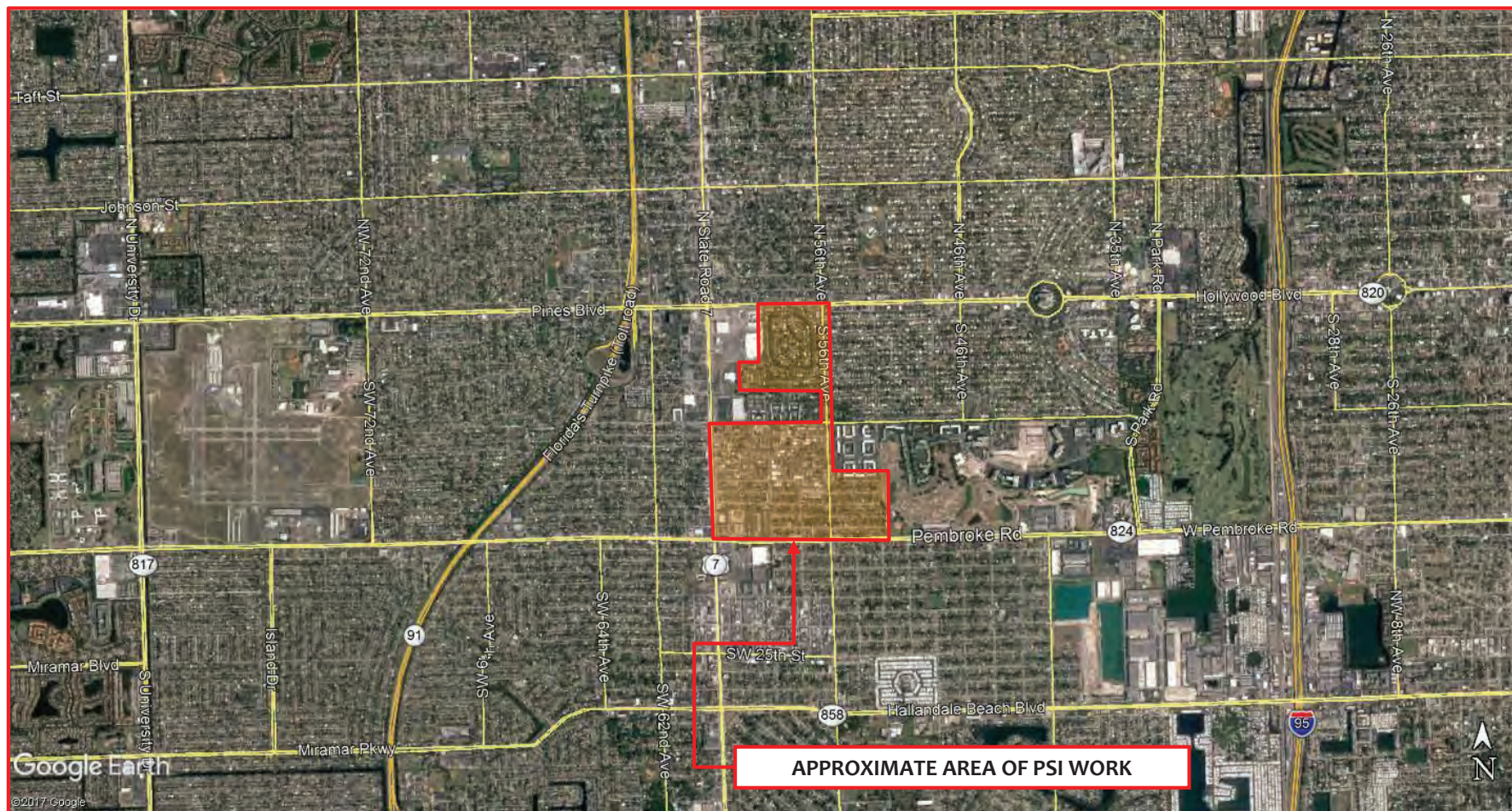


Daniel Gonzalez, E.I.  
Staff Engineer

## **ATTACHMENTS**



## SITE VICINITY MAP



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

CHKD.: DG

FIGURE No.: 1

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.



# BORING LOCATION PLAN I



Approximate Core (C)/SPT Boring (RB) Location

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FIGURE No.: 2

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## BORING LOCATION PLAN II



**Approximate Core (C)/SPT Boring (RB) Location**

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HOLLYWOOD, FLORIDA

DATE: 9/6/2017

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CHKD:: DG

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FIGURE No.: 3

PSI PROJECT No.: 0397-1242

## PAVEMENT CORE

C-1  
THICKNESS = 10"



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FIGURE No.: 4

PSI PROJECT No.: 0397-1242

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## PAVEMENT CORE

**C-2**  
**THICKNESS = 9.5"**



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HOLLYWOOD, FLORIDA

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FIGURE No.: 5

PSI PROJECT No.: 0397-1242

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**PAVEMENT CORE**  
**C-3**  
**THICKNESS = 10.75"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

CHKD:: DG

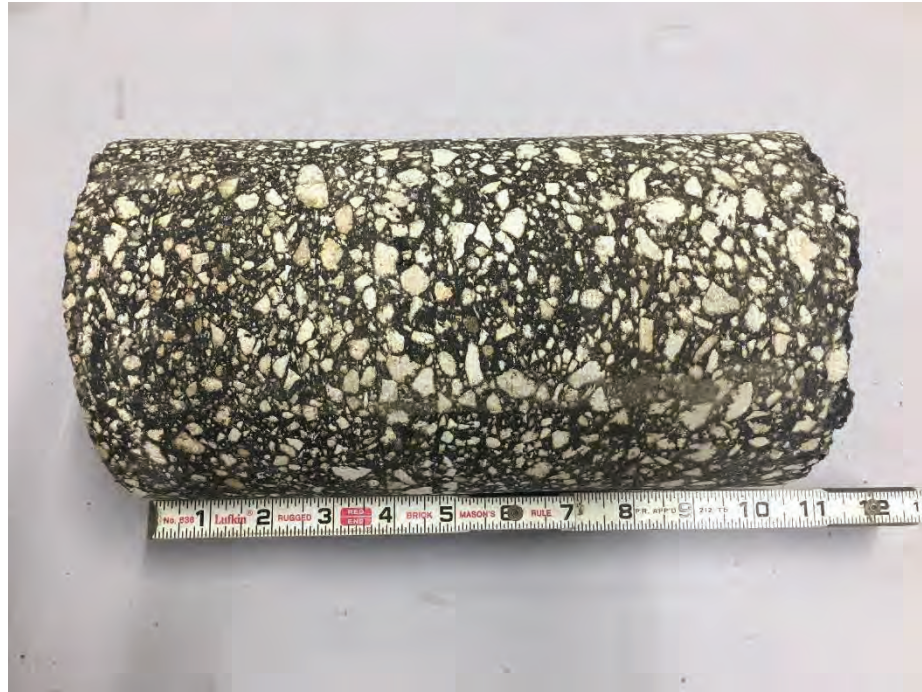
**intertek** **psi**  
Total Quality. Assured.

FIGURE No.: 6

PSI PROJECT No.: 0397-1242

## PAVEMENT CORE

**C-4**  
**THICKNESS = 9.5"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

CHKD:: DG

FIGURE No.: 7

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.



**PAVEMENT CORE**  
**C-5**  
**THICKNESS = 9.75"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

CHKD.: DG

FIGURE No.: 8

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.



**PAVEMENT CORE**  
**C-6**  
**THICKNESS = 9.25"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

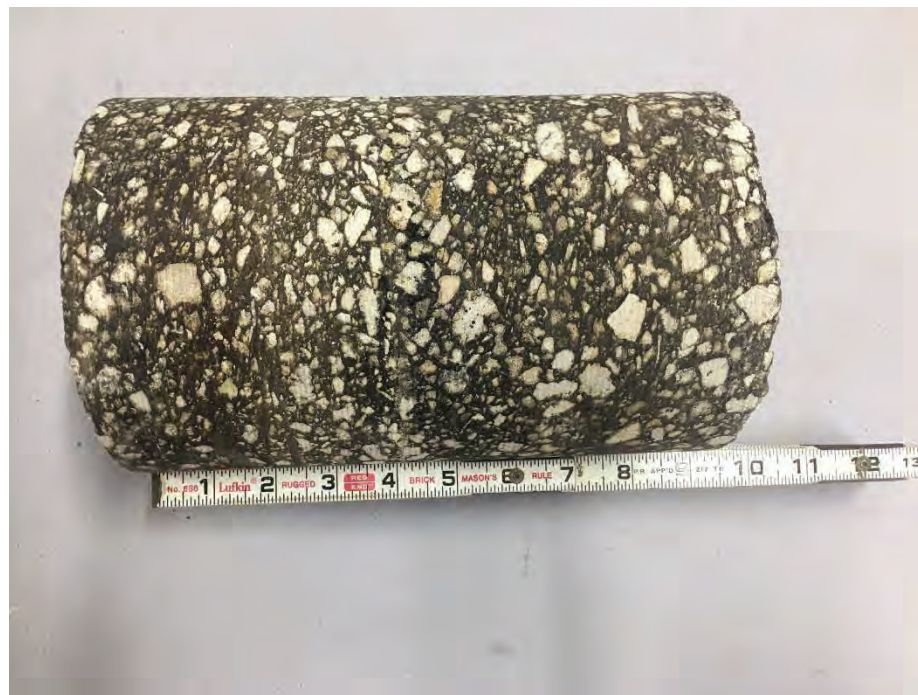
CHKD:: DG

FIGURE No.: 9

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.

**PAVEMENT CORE**  
**C-7**  
**THICKNESS = 10.75"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

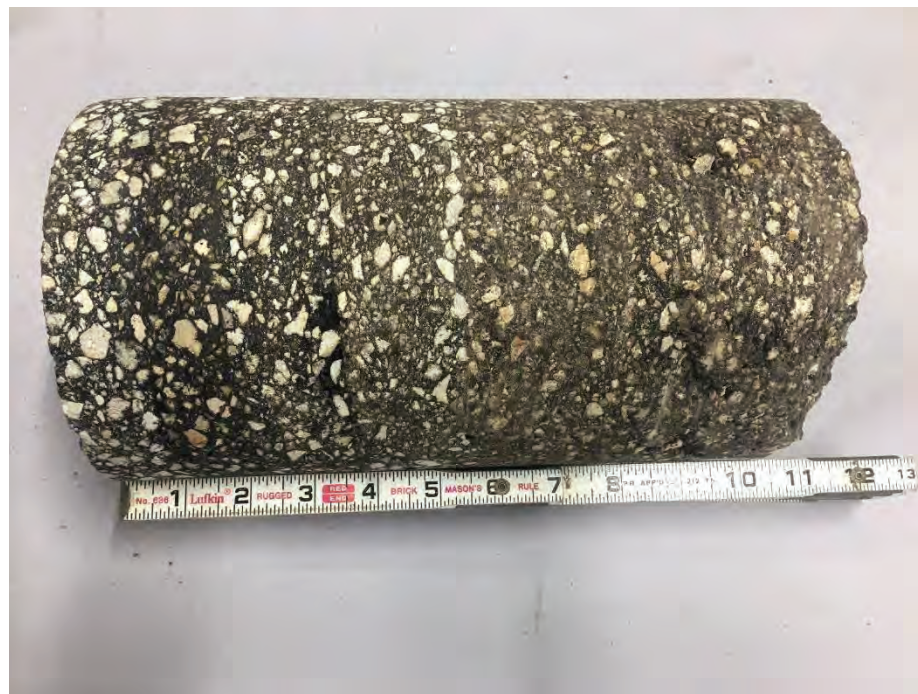
CHKD:: DG

FIGURE No.: 10

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.

**PAVEMENT CORE**  
**C-8**  
**THICKNESS = 10.75"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

CHKD:: DG

FIGURE No.: 11

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.

## PAVEMENT CORE

**C-9**  
**THICKNESS = 8.0"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

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CHKD.: DG

FIGURE No.: 12

PSI PROJECT No.: 0397-1242

**intertek** **psi**  
Total Quality. Assured.



**PAVEMENT CORE**  
**C-10**  
**THICKNESS = 13.5"**



**GEOTECHNICAL ENGINEERING SERVICES**  
REPLACEMENT OF WATER MAINS  
HOLLYWOOD, FLORIDA

DATE: 9/6/2017

DRAWN: AS

CHKD:: DG

**intertek** **[psi]**  
Total Quality. Assured.







FIGURE No.: 13

PSI PROJECT No.: 0397-1242








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0	0						ASPHALT (9.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	15-33-21-18 N=54			>>©
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown LIMESTONE with Fine to Medium SAND		15-10-8-8 N=18			©
5				3					9-10-9-5 N=19			©
				4					6-5-5-6 N=10			©

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (10.75")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	44-30-19-14 N=49			
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown LIMESTONE with Fine to Medium Sand		13-10-10-8 N=20			
5				3					9-7-7-6 N=14			
				4					7-7-5-5 N=12			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (9.5")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	18-10-7-6- N=17			
						Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2		Light Brown LIMESTONE with Fine to Medium Sand		7-6-6-5 N=12			
5				3				6-7-7-6 N=14			
				4				6-5-5-5 N=10			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.










PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (9.75")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	18-22-18-14 N=40			
						Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2		Light Brown LIMESTONE with Fine to Medium SAND		15-13-9-9 N=22			
5				3				10-10-8-7 N=18			
				4				7-6-6-5 N=12			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (9.25")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	18-23-20-16 N=43			
						Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2		Light Brown LIMESTONE with Fine to Medium SAND		13-10-10-9 N=20			
5				3				9-7-7-6 N=14			
				4				6-6-5-5 N=11			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242		Drilling Method: Rotary Drilling		<b>WATER LEVELS</b>	
Project: Replacement of Water Mains		Sampling Method: SS		▽ While Drilling N.E. feet	
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL		Hammer Type: Automatic		▼ Upon Completion N.E. feet	
		Boring Location: Refer to Figure 2 and Figure 3		▼ Delay N/A	

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp				Additional Remarks
0							ASPHALT (1.5")								
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	31-20-15-10 N=35						
							Dark Brown Fine to Medium SAND with Traces of Limerock	SP							
				2			Light Brown Fine to Medium SAND	SP	10-9-6-6 N=15						
							Light Brown Fine to Medium SAND with Traces of Limestone								
5				3			Light Brown Limestone with Fine to Medium Sand	SP	5-4-4-3 N=8						
				4					4-5-5-5 N=10						

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	28-22-12-11 N=34			
							Dark Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown Fine to Medium SAND	SP	6-5-3-3 N=8			
							Light Brown Fine to Medium SAND with Traces of Limestone					
5				3			Light Brown Limestone with Fine to Medium Sand	SP	4-3-3-3 N=6			
				4					4-5-5-4 N=10			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	29-24-13-10 N=37			
							Dark Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown Fine to Medium SAND	SP	9-7-7-6 N=14			
							Light Brown Fine to Medium SAND with Traces of Limestone					
5				3			Light Brown LIMESTONE with Fine to Medium Sand	SP	6-5-5-6 N=10			
				4					5-4-4-4 N=8			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242		Drilling Method: Rotary Drilling		<b>WATER LEVELS</b>	
Project: Replacement of Water Mains		Sampling Method: SS		▽ While Drilling N.E. feet	
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL		Hammer Type: Automatic		▼ Upon Completion N.E. feet	
		Boring Location: Refer to Figure 2 and Figure 3		▼ Delay N/A	

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 2.0 4.0		Additional Remarks
0							ASPHALT (1.5") Gray LIMEROCK with Fine to Medium Sand	GP-GM	20-21-16-11 N=37				
				1									
				2			Light Brown Fine to Medium SAND with Traces of Limestone		10-9-9-7 N=18				
				3				SP	6-6-5-5 N=11				
5				4					6-7-6-7 N=13				

Completion Depth: 8.0 ft		Sample Types:		Latitude:	
Date Boring Started: 8/17/17		Shelby Tube		Longitude:	
Date Boring Completed: 8/17/17		Hand Auger		Drill Rig: CME-75	
Logged By: I.L.		Calif. Sampler		Remarks:	
Drilling Contractor: PSI, Inc.		Texas Cone			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture ⊠ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5") Gray LIMEROCK with Fine to Medium Sand	GP-GM	31-24-15-7 N=39			
				1								
				2			Light Brown Fine to Medium SAND	SP	12-10-8-7 N=18			
				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	6-5-5-5 N=10			
5				4			Light Brown LIMESTONE with Fine to Medium Sand		5-8-7-7 N=15			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0							ASPHALT (1.5") Gray LIMEROCK with Fine to Medium Sand	GP-GM	25-21-13-9 N=34			
				1			Light Brown Fine to Medium SAND	SP	9-7-7-6 N=14			
				2			Light Brown Fine to Medium SAND with Traces of Limestone	SP	5-5-5-4 N=10			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		5-6-7-7 N=13			
				4								

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.










PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	20-15-10-9 N=25			
							Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown Fine to Medium SAND	SP	7-7-6-5 N=13			
							Light Brown LIMESTONE with Fine to Medium Sand					
5				3					5-5-4-3 N=9			
				4					3-4-4-4 N=8			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.








Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	WATER LEVELS	
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling	N.E. feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion	N.E. feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay	N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %  STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture    ◼ PL + LL  STRENGTH, tsf ▲ Qu       * Qp	Additional Remarks
0	0					ASPHALT (2.0")				
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM			
						Light Brown Fine to Medium SAND with Traces Limerock	SP	19-13-11-10 N=24		
				2		Light Brown Fine to Medium SAND		6-5-5-5 N=10		
5				3			SP	5-4-4-3 N=8		
				4				3-3-4-4 N=7		

Completion Depth:	8.0 ft	Sample Types:	 Shelby Tube	Latitude:
Date Boring Started:	8/17/17	 Auger Cutting	 Hand Auger	Longitude:
Date Boring Completed:	8/17/17	 Split-Spoon	 Calif. Sampler	Drill Rig: CME-75
Logged By:	I.L.	 Rock Core	 Texas Cone	Remarks:
Drilling Contractor:	PSJ, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture ⊠ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	18-16-12-10 N=28			
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown Fine to Medium SAND	SP	7-7-5-5 N=12			
							Light Brown LIMESTONE with Fine to Medium Sand					
5				3					5-5-4-4 N=9			
				4					4-3-3-4 N=6			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture ⊠ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	24-21-17-10 N=38			
				2			Light Brown Fine to Medium SAND with Traces of Limestone		10-10-8-7 N=18			
5				3				SP	7-6-5-5 N=11			
				4					4-3-4-3 N=7			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	22-19-14-6 N=33			
							Dark Brown Fine to Medium SAND	SP				
				2			Light Brown Fine to Medium SAND	SP	5-5-4-3 N=9			
							Light Brown LIMESTONE with Fine to Medium Sand		7-7-6-5 N=13			
5				3					6-5-5-5 N=10			
				4								

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5")					
				1			Light Brown Fine to Medium SAND with Traces of Limerock	SP	27-20-13-10 N=33			
				2			Gray Fine to Medium SAND	SP	6-5-5-4 N=10			
				3			Light Brown Fine to Medium SAND	SP	4-4-3-3 N=7			
5				4			Light Brown LIMESTONE with Fine to Medium Sand		5-4-4-4 N=8			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242		Drilling Method: Rotary Drilling		<b>WATER LEVELS</b>	
Project: Replacement of Water Mains		Sampling Method: SS		▽ While Drilling N.E. feet	
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL		Hammer Type: Automatic		▼ Upon Completion N.E. feet	
		Boring Location: Refer to Figure 2 and Figure 3		▼ Delay N/A	

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp		Additional Remarks
0							ASPHALT (2.0")						
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	38-23-21-12 N=44				
				2			Light Brown Fine to Medium SAND with Traces of Limestone		11-6-9-8 N=18				
5				3				SP	9-7-7-7 N=14				
				4					5-4-4-4 N=8				

Completion Depth: 8.0 ft		Sample Types:		Latitude:	
Date Boring Started: 8/17/17		Shelby Tube		Longitude:	
Date Boring Completed: 8/17/17		Hand Auger		Drill Rig: CME-75	
Logged By: I.L.		Calif. Sampler		Remarks:	
Drilling Contractor: PSI, Inc.		Texas Cone			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	35-25-22-15 N=47			
				2			Light Brown Fine to Medium SAND with Traces of Limestone		12-10-10-10 N=20			
5				3				SP	11-9-7-7 N=16			
				4					5-5-4-4 N=9			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.



PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  <b>MATERIAL DESCRIPTION</b>	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture    PL LL  STRENGTH, tsf ▲ Qu            * Qp				Additional Remarks
0						ASPHALT (1.5")								
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	19-11-7-7 N=18						
						Light Brown Fine to Medium SAND	SP							
				2		Light Brown LIMESTONE with Fine to Medium Sand		8-8-7-6 N=15						
5				3				7-7-9-10 N=16						
				4				10-8-8-7 N=16						

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

## WATER LEVELS

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
⏸ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	21-16-10-7 N=26			
							Gray Fine to Medium SAND	SP				
				2			Light Brown Fine to Medium SAND	SP	6-5-3-3 N=8			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		18-13-9-5 N=22			
				4					7-5-5-4 N=10			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (1.5")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	23-16-12-9 N=28			
				2		Light Brown Fine to Medium SAND		6-4-4-3 N=8			
				3			SP	3-3-3-3 N=6			
5				4		Light Brown LIMESTONE with Fine to Medium Sand		5-4-4-4 N=8			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

## WATER LEVELS

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	21-15-8-7 N=23			
				2			Light Brown Fine to Medium SAND	SP				
				2			Light Brown Fine to Medium SAND with Traces of Limestone	SP	9-9-7-8- N=16			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		8-7-8-10 N=15			
				4					9-7-7-6 N=14			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	20-15-13-5 N=28			
							Dark Brown Fine to Medium SAND	SP				
				2			Light Brown Fine to Medium SAND	SP	5-5-5-3 N=10			
							Light Brown LIMESTONE with Fine to Medium Sand					
5				3					6-7-6-4 N=13			
				4					6-5-4-4 N=9			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	<b>WATER LEVELS</b>
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling N.E. feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion N.E. feet
	Boring Location: Refer to Figure 2 and Figure 3	▽ Delay N/A

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	31-27-10-9 N=37			
				2			Gray Fine to Medium SAND	SP	5-4-3-3 N=7			
				3			Light Brown Fine to Medium SAND	SP	3-4-3-3 N=7			
5				4			Light Brown LIMESTONE with Fine to Medium Sand		5-5-6-5 N=11			

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture ⊠ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (2.0")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	25-22-13-9 N=35			
						Gray Fine to Medium SAND	SP				
				2		Light Brown LIMESTONE with Fine to Medium Sand		10-10-8-7 N=18			
5				3				8-8-6-7 N=14			
				4				9-8-7-7 N=15			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	19-13-9-9 N=22			
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Brown Silty Fine SAND	SM	5-5-4-4 N=9			
				3			Light Brown LIMESTONE with Fine to Medium Sand		6-5-5-6 N=10			
				4					7-9-9-8 N=18			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.










PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	21-11-8-8- N=19			
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Brown Silty Fine SAND	SM	4-2-2-3 N=4			
							Light Brown LIMESTONE with Fine to Medium Sand		7-10-11-10 N=21			
5				3								
				4					9-9-8-7 N=17			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5")					
				1			Light Brown Fine to Medium SAND with Traces of Limerock	GP-GM	18-15-11-9 N=26			
				2			Gray Fine to Medium SAND	SP	7-5-5-5 N=10			
5				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	4-3-4-4 N=7			
				4					4-3-3-4 N=6			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture ⊠ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	18-14-12-11 N=26			
				2			Light Brown Fine to Medium SAND	SP	7-4-3-3 N=7			
5				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	4-4-3-3 N=7			
				4					3-3-4-3 N=7			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (1.5") Light Brown Fine to Medium SAND with Traces Limerock	SP	16-12-11-7 N=23			
				1			Light Brown Fine to Medium SAND	SP	7-6-6-5 N=12			
				2			Light Brown Fine to Medium SAND with Traces of Limestone	SP	4-3-3-3 N=6			
5				3				SP	3-3-4-3 N=7			
				4								

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	<b>WATER LEVELS</b>
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling N.E. feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion N.E. feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture    PL LL STRENGTH, tsf ▲ Qu            * Qp	Additional Remarks
0	0						ASPHALT (2.5")	GP-GM				
				1			Light Brown LIMEROCK with Fine to Medium Sand		22-15-9-6 N=24			
							Brown Fine to Medium SAND	SP				
				2			Dark Brown Fine to Medium SAND with traces of Limestone	SP	4-3-3-3 N=6			
							Light Brown LIMESTONE with Fine to Medium Sand		3-4-3-3 N=7			
5				3				SP				
				4					5-4-4-4 N=8			

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0	0						ASPHALT (2.0")					
				1			Light Brown Fine to Medium SAND with Traces Limerock	SP	15-12-10-9 N=22			
				2			Gray Fine to Medium SAND	SP	6-5-4-4 N=9			
				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	3-2-2-2 N=4			
				4			Light Brown LIMESTONE with Fine to Medium Sand		3-3-4-4 N=7			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture □ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown Fine to Medium SAND with Traces of Limerock	SP	19-16-14-10 N=30			
				2			Gray Fine to Medium SAND	SP	8-7-7-5 N=14			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		5-5-4-4 N=9			
				4					4-4-3-3 N=7			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 4.0	Additional Remarks
0							ASPHALT (2.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	31-29-16-15 N=45			
				2			Light Brown Fine to Medium SAND	SP	12-9-6-6 N=15			
				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	5-5-4-4 N=9			
5				4			Light Brown LIMESTONE with Fine to Medium Sand		4-4-4-3 N=8			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.










PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (3.75")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	27-21-13-10 N=34			
							Brown Fine to Medium SAND	SP				
				2			Brown Fine to Medium SAND with Traces of Limestone	SP	5-3-3-3 N=6			
				3			Light Brown LIMESTONE with Fine to Medium Sand		4-3-4-4 N=7			
				4					5-5-4-4 N=9			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242		Drilling Method: Rotary Drilling		<b>WATER LEVELS</b>	
Project: Replacement of Water Mains		Sampling Method: SS		▽ While Drilling N.E. feet	
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL		Hammer Type: Automatic		▼ Upon Completion N.E. feet	
		Boring Location: Refer to Figure 2 and Figure 3		▼ Delay N/A	

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp				Additional Remarks
0							ASPHALT (2.0")								
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	16-13-10-10 N=23						
				2			Gray Fine to Medium SAND	SP	6-6-5-4 N=11						
5				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	4-3-3-3 N=6						
				4					4-4-4-3 N=8						

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (4.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	31-29-12-9 N=41			
							Brown Fine to Medium SAND	SP				
				2			Light Brown Fine to Medium SAND with Traces of Limestone	SP	8-8-7-6 N=15			
							Light Brown LIMESTONE with Fine to Medium Sand					
5				3					7-7-7-6 N=14			
				4					6-6-5-5 N=11			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242		Drilling Method: Rotary Drilling		<b>WATER LEVELS</b>	
Project: Replacement of Water Mains		Sampling Method: SS		▽ While Drilling N.E. feet	
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL		Hammer Type: Automatic		▼ Upon Completion N.E. feet	
		Boring Location: Refer to Figure 2 and Figure 3		▼ Delay N/A	

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp				Additional Remarks
0							ASPHALT (4.5")								
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	29-18-11-8 N=29						
							Brown Fine to Medium SAND	SP							
				2			Light Brown LIMESTONE with Fine to Medium Sand		9-7-7-6 N=14						
5				3					6-6-7-7 N=13						
				4					6-5-5-4 N=10						

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (2.0")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	15-12-10-7 N=22			
				2		Brown Fine to Medium SAND		6-3-3-2 N=6			
				3			SP	3-2-2-4 N=4			
5				4		Light Brown LIMESTONE with Fine to Medium Sand		5-8-9-6 N=17			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.








PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**  
▽ While Drilling 7.6 feet  
▼ Upon Completion 7.6 feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 2.0 4.0	Additional Remarks
0							ASPHALT (4.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	16-7-6-4 N=13			
				2			Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	3-2-2-2 N=4			
5				4			Light Brown LIMESTONE with Fine to Medium Sand		2-3-4-4 N=7			
									5-4-4-5 N=8			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:



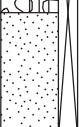

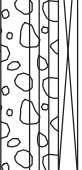
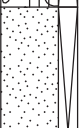

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

## WATER LEVELS

▽ While Drilling 7.8 feet  
▼ Upon Completion 7.8 feet  
▼ Delay N/A

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0	0						ASPHALT (3.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	27-16-9-6 N=25			
							Light Brown Fine to Medium SAND	SP				
				2			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	7-7-8-6 N=15			
							Light Brown Fine to Medium SAND with Traces of Limestone	SP	6-6-5-5 N=11			
5	5			3			Light Brown LIMESTONE with Fine to Medium Sand		7-5-5-5 N=10			
												

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

## WATER LEVELS

▽ While Drilling 7.8 feet  
▼ Upon Completion 7.8 feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Brown LIMEROCK with Fine to Medium Sand	GP-GM	16-11-9-9 N=20			
				2			Brown Fine to Medium SAND	SP	7-5-2-2 N=7			
				3			Light Brown Fine to Medium SAND with Traces of Limestone	SP	3-3-2-3 N=5			
				4			Light Brown LIMESTONE with Fine to Medium Sand		4-6-6-7 N=12			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:



PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling 7.6 feet  
▼ Upon Completion 7.6 feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	19-9-7-6 N=16			
				2					5-5-4-5 N=9			
				3			Light Brown LIMESTONE with Fine to Medium Sand		6-7-7-7 N=14			
				4					8-7-6-6 N=13			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

## WATER LEVELS

▽ While Drilling 7.8 feet  
▼ Upon Completion 7.8 feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 2.0 4.0	Additional Remarks
0							ASPHALT (2.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	21-11-8-7 N=19			
				2					6-6-5-5 N=11			
				3			Light Brown LIMESTONE with Fine to Medium Sand		6-7-6-6 N=13			
				4					7-5-5-6 N=10			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0							ASPHALT (4.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	23-12-8-7 N=20			
				2					6-5-7-7 N=12			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		9-7-6-6 N=13			
				4					7-7-6-5 N=13			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	<b>WATER LEVELS</b>
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling 7.5 feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion 7.5 feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0	0						ASPHALT (2.25")					
							Light Brown LIMEROCK with Fine to Medium Sand	GP-GM				
							Light Brown Fine to Medium SAND		15-7-5-4 N=12			
				1				SP				
				2					3-3-2-3 N=5			
				3			Light Brown LIMESTONE with Fine to Medium Sand		10-10-9-7 N=19			
				4					8-7-7-4 N=14			

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

## WATER LEVELS

▽ While Drilling 7.6 feet  
▼ Upon Completion 7.6 feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	15-9-6-5 N=15			
				2			Light Brown Fine to Medium SAND	SP	4-4-3-3 N=7			
				3			Light Brown LIMESTONE with Fine to Medium Sand		6-5-5-5 N=10			
				4					7-7-6-5 N=13			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	<b>WATER LEVELS</b>
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling 7.8 feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion 7.8 feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0	0						ASPHALT (2.0")					
							Light Brown LIMEROCK with Fine to Medium Sand	GP-GM				
				1			Light Brown Fine to Medium SAND		16-6-4-4 N=10			
				2				SP	3-3-3-2 N=6			
	5			3			Light Brown LIMESTONE with Fine to Medium Sand		5-7-7-6 N=14			
				4					7-6-6-5 N=12			

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			








The stratification lines represent approximate boundaries. The transition may be gradual.

# LOG OF BORING RB-50

Sheet 1 of 1

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	WATER LEVELS	
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling	7.8 feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion	7.8 feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay	N/A

[illegible]

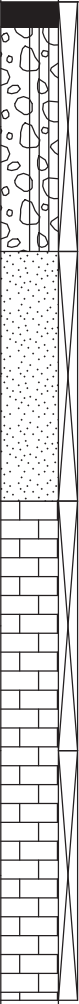

Completion Depth:	8.0 ft	Sample Types:	 Shelby Tube	Latitude:
Date Boring Started:	8/17/17	 Auger Cutting	 Hand Auger	Longitude:
Date Boring Completed:	8/17/17	 Split-Spoon	 Calif. Sampler	Drill Rig: CME-75
Logged By:	I.L.	 Rock Core	 Texas Cone	Remarks:
Drilling Contractor:	PSJ, Inc.			








The stratification lines represent approximate boundaries. The transition may be gradual.

# LOG OF BORING RB-51

Sheet 1 of 1

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	<b>WATER LEVELS</b>	
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling	7.8 feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion	7.8 feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay	N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION  Station: N/A Offset: N/A	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %  STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture    ◼ PL ◼ LL  STRENGTH, tsf ▲ Qu       * Qp	Additional Remarks
									0          25          50	
									0          2.0          4.0	
0						ASPHALT (2.0")				
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	13-9-5-3 N=14		
				2		Light Brown FINE TO MEDIUM SAND	SP	3-2-2-2 N=4		
5				3		Light Brown LIMESTONE with Fine to Medium Sand		7-10-11-9 N=21		
				4				11-8-7-6 N=15		
										

Completion Depth:	8.0 ft	Sample Types:	 Shelby Tube	Latitude:
Date Boring Started:	8/17/17	 Auger Cutting	 Hand Auger	Longitude:
Date Boring Completed:	8/17/17	 Split-Spoon	 Calif. Sampler	Drill Rig: CME-75
Logged By:	I.L.	 Rock Core	 Texas Cone	Remarks:
Drilling Contractor:	PSJ, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.



PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.5")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	15-11-7-5 N=18			
				2			Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				3			Light Brown Fine to Medium SAND	SP	4-4-4-3 N=8			
5				4			Light Brown LIMESTONE with Fine to Medium Sand		6-9-9-10 N=18			
									10-8-8-6 N=16			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	Additional Remarks
0	0						ASPHALT (4.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	27-22-10-8 N=32			
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Light Brown Fine to Medium SAND	SP	6-6-5-5 N=11			
				3			Light Brown LIMESTONE with Fine to Medium Sand		7-9-9-8 N=18			
				4					10-10-9-7 N=19			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling 7.8 feet  
▼ Upon Completion 7.8 feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (2.0")					
				1		Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	15-13-9-9 N=22			
				2		Light Brown Fine to Medium SAND with Traces of Limestone	SP	7-5-5-5 N=10			
5				3		Light Brown LIMESTONE with Fine to Medium Sand		6-8-7-7 N=15			
				4				8-5-5-4 N=10			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242	Drilling Method: Rotary Drilling	<b>WATER LEVELS</b>
Project: Replacement of Water Mains	Sampling Method: SS	▽ While Drilling 7.6 feet
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL	Hammer Type: Automatic	▼ Upon Completion 7.6 feet
	Boring Location: Refer to Figure 2 and Figure 3	▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL 25 LL 50 STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (2.0")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	12-11-8-8 N=19			
				2			Light Brown Fine to Medium SAND with Traces of Limestone	SP	6-5-5-4 N=10			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		5-7-7-7 N=14			
				4					6-6-5-5 N=11			

Completion Depth: 8.0 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started: 8/17/17	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed: 8/17/17	Split-Spoon	Calif. Sampler	Drill Rig: CME-75
Logged By: I.L.	Rock Core	Texas Cone	Remarks:
Drilling Contractor: PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (5.25")					
				1			Light Brown LIMEROCK with Fine to Medium Sand	GP-GM	21-12-8-6 N=20			
							Light Brown Fine to Medium SAND with Traces of Limerock	SP				
				2			Brown Fine to Medium SAND	SP	6-5-5-5 N=10			
				3			Light Brown LIMESTONE with Fine to Medium Sand		7-7-8-8 N=15			
				4					9-8-9-6 N=17			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL








Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▽ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0							ASPHALT (10.75")					
				1			Light Brown Fine to Medium SAND with Traces of Limerock	SP	16-13-12-12 N=24			
				2			Brown Fine to Medium SAND	SP	10-6-5-5 N=11			
5				3			Light Brown LIMESTONE with Fine to Medium Sand		6-6-7-6 N=13			
				4					8-8-7-7 N=15			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

Sample Types:  
 Auger Cutting  
 Split-Spoon  
 Rock Core  
 Shelby Tube  
 Hand Auger  
 Calif. Sampler  
 Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI Job No.: 0397-1242  
Project: Replacement of Water Mains  
Location: Between Pembroke Rd, Hollywood Blvd, SR 7 & SW 22nd Ave, Hollywood, FL

Drilling Method: Rotary Drilling  
Sampling Method: SS  
Hammer Type: Automatic  
Boring Location: Refer to Figure 2 and Figure 3

**WATER LEVELS**

▽ While Drilling N.E. feet  
▼ Upon Completion N.E. feet  
▼ Delay N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A  MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						ASPHALT (13.5")					
				1		Light Brown Fine to Medium SAND with Traces of Limerock	SP	15-11-11-10 N=22			
				2		Brown Fine to Medium SAND	SP	8-9-9-7 N=18			
				3		Light Brown LIMESTONE with Fine to Medium Sand		6-8-8-9 N=16			
				4				9-9-8-7 N=17			

Completion Depth: 8.0 ft  
Date Boring Started: 8/17/17  
Date Boring Completed: 8/17/17  
Logged By: I.L.  
Drilling Contractor: PSI, Inc.

**Sample Types:**

Auger Cutting  
Split-Spoon  
Rock Core

Shelby Tube  
Hand Auger  
Calif. Sampler  
Texas Cone

Latitude:  
Longitude:  
Drill Rig: CME-75  
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.



# **APPENDIX B**

# **PERMITS OBTAINED** **BY OWNER**







**LICENSE FOR INSTALLATION OF WASTEWATER  
COLLECTION/TRANSMISSION SYSTEM**

**APPLICANT:**

City of Hollywood  
Attention: Vivek Galav, P.E.,  
Director of Public Utilities  
1621 N 14th Avenue  
Hollywood, FL 33020

EPGMD LICENSE NO.: WW-62820

EXPIRATION DATE: 02/25/2026

DEP ID NO.: HOL #054633-702

SEC-TWP-RNG: 24-51-41

PROJECT: Washington Park/Lawn Acres Sewer  
Expansion (18-7089)

This license is issued under the provisions of Chapter 27 of the Broward County Code of Ordinances, hereinafter called the Code. The above named-applicant, hereinafter called licensee, is hereby authorized to perform the work shown on the approved drawing(s), plans, documents, and specifications submitted by applicant and made a part hereof and described specifically below. Commencement of construction under this license shall be deemed acceptance of all conditions specified in the license. License conditions shall also be deemed to be accepted if they are not objected to in writing and received by EPGMD within fourteen days of receipt of the license by the applicant.

The issuance of this license is a final agency determination. A person with a substantial interest may file a petition to request review of, or to intervene in a review of, a final administrative determination within 10 days of issuance of the license, subject to the provisions of Section 27-14 of the Code.

Your Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System has been evaluated. This General or Individual Permit is hereby issued pursuant to the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4 and 62-604, Florida Administrative Code (F.A.C.).

**GRAVITY SEWER:** 125 LF of 24" PVC @ 0.08% Minimum Slope (60 Manholes)  
1,406 LF of 18" PVC @ 0.12% Minimum Slope  
1,325 LF of 15" PVC @ 0.15% Minimum Slope  
53 LF of 12" PVC @ 0.22% Minimum Slope  
10,077 LF of 8" PVC @ 0.40% Minimum Slope  
1,761 LF of 8" PVC @ 0.28% Minimum Slope

**SUBJECT TO GENERAL CONDITIONS #1- #11 and SPECIFIC CONDITIONS # 1 - # 3.**

In accordance with: Plans, Sheets G-000 thru G004A, C-170 thru C-191, and C-224 thru C-241 (Received 08/24/2020; Revised 10/06/2020 and 01/30/2021). Tetra Tech. Project #: 200-16428-17001/18001. None Attached.

Located at: (Pembroke Rd to Washington St) S 56th Ave, Hollywood, FL 33022

Serving: 85 SFH Units, 40 MFH Units, 851,278 SF Office/Retail/Warehouse, 26,272 SF Auto Service Station, 10,251 SF Place of Worship/Funeral Home, and 2,614 SF Restaurant.

Issued this 26th day of February, 2021.

Environmental Protection and Growth Management Department  
Prepared by Ryan Flaherty

\_\_\_\_\_  
Yvel Rocher, P.E., Environmental Program Manager  
Domestic Wastewater Program

ec: FDEP/WPB  
Asif Ali, PDMD Front Desk  
Janine M. Alexander, P.E., Tetra Tech

## **GENERAL CONDITIONS:**

1. The terms, conditions, requirements, limitations and restrictions set forth herein are accepted by the licensee and must be completed by the licensee and are enforceable by EPGMD pursuant to the Code. EPGMD will review this license periodically and may revoke or suspend the license, and initiate administrative and/or judicial action for any violation of the conditions by the licensee, its agents, employees, servants or representatives.
2. This license is valid only for the specific uses set forth in the license application and any deviation from the approved uses may constitute grounds for revocation, suspension, and/or enforcement action by EPGMD.
3. In the event the licensee is temporarily unable to comply with any of the conditions of the license or with the Code, the licensee shall notify EPGMD within eight (8) hours or as stated in the specific section of the Code. Within three (3) working days of the event, the licensee shall submit a written report to EPGMD that describes the incident, its cause, the measures being taken to correct the problem and prevent its reoccurrence, the owner's intention regarding the repair, replacement and reconstruction of destroyed facilities and a schedule of events leading toward operation with the license condition.
4. The issuance of this license does not convey any vested rights or exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights, or any violation of federal, state or local laws or regulations.
5. This license must be available for inspection on the licensee's premises during the entire life of the license.
6. By accepting this license, the licensee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this licensed facility or activity, that are submitted to the County, may be used by the County as evidence in any enforcement proceeding arising under the Code, except where such use is prohibited by Section 403.111, F.S.
7. The licensee agrees to comply and shall comply with all provisions of the most current version of the Code.
8. Any new owner or operator of a licensed facility shall apply by letter for a transfer of license within thirty (30) days after sale or legal transfer. The transferor shall remain liable for performance in accordance with the license until the transferee applies for and is granted a transfer of license. The transferee shall be liable for any violation of the Code that results from the transferee's activities. The transferee shall comply with the transferor's original license conditions when the transferee has failed to obtain its own license.
9. The licensee, by acceptance of this license, specifically agrees to allow access and shall allow access to the licensed source, activity or facility at times to EPGMD personnel for the purposes of inspection and testing to determine compliance with this license and the Code.
10. This license does not constitute a waiver or approval of any other license, approval, or regulatory requirement by this or any other governmental agency that may be required.
11. Enforcement of the terms and provisions of this license shall be at the reasonable discretion of EPGMD, and any forbearance on behalf of EPGMD to exercise its rights hereunder in the event of any breach by the licensee, shall not be deemed or construed to be a waiver of EPGMD's rights hereunder.

## **SPECIFIC CONDITIONS:**

1. This license is valid for construction of a sewage collection/transmission system and/or a reuse distribution system, or a WWTP modification only. All connections to the system must be approved by EPGMD prior to the issuance of a building permit.
2. Any deviation from approved plans and/or specifications affecting capacity, flow, or operation of components shall be submitted to and approved by the EPGMD before such changes are made.
3. The applicant shall be responsible for supplying as-built or record drawing(s) to EPGMD upon completion of the project. Such drawing(s) shall be signed and sealed by an Engineer registered in the State of Florida and be based on accurate records maintained by the Engineer or by a Land Surveyor currently registered in the State of Florida. Drawing(s) shall indicate locations and elevations of all pipe lines, manholes, pump stations and appurtenances installed under this project's license. Connection to the new system shall not be approved until the as-built (or record) drawing(s), certification documentation, and fees have been provided to and approved by EPGMD.



# Florida Department of Environmental Protection

Southeast District Office  
3301 Gun Club Road, MSC 7210-1  
West Palm Beach, Florida 33406

Ron DeSantis  
Governor

Jeanette Nuñez  
Lt. Governor

Noah Valenstein  
Secretary

## CERTIFIED MAIL

In the Matter of an  
Application for Permit by:

City of Hollywood  
Attention: Vivek Galav, P.E.,  
Director of Public Utilities  
1621 N 14th Avenue  
Hollywood, FL 33020

PERMIT NUMBER:	HOL #054633-702
EPGMD LICENSE:	WW-62820
ISSUANCE DATE:	02/26/2021
EXPIRATION DATE:	02/25/2026
COUNTY:	BROWARD
PROJECT:	Washington Park/Lawn Acres Sewer Expansion (18-7089)
CONNECTED TO:	Hollywood

## NOTICE OF PERMIT ISSUANCE

The Department's proposed agency action shall become final unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, Florida Statutes, within fourteen days of receipt of notice. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Petitions by the applicant or any of the persons listed below must be filed within fourteen days of receipt of this written notice. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), Florida Statutes, must be filed within fourteen days of publication of the notice or within fourteen days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition within fourteen days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within fourteen days of receipt of notice shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, Florida Statutes. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any; the Department permit identification number and the county in which the subject matter or activity is located;
- A statement of how and when each petitioner received notice of the Department action;
- A statement of how each petitioner's substantial interests are affected by the Department action;

- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A statement of facts that the petitioner contends warrant reversal or modification of the Department action;
- (f) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation under Section 120.573, Florida Statutes, is not available for this proceeding.

This permit action is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the above. Upon the timely filing of a petition this permit will not be effective until further order of the Department.

Any party to the permit has the right to seek judicial review of the permit action under Section 120.68, Florida Statutes, by the filing of a notice of appeal under Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when this permit action is filed with the clerk of the Department.

Executed in Plantation, Florida

BROWARD COUNTY

Environmental Protection and Growth Management Department

as delegated agent for:

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

---

Yvel Rocher, P.E., Environmental Program Manager  
Environmental Engineering and Permitting Division



# Florida Department of Environmental Protection

Southeast District Office  
3301 Gun Club Road, MSC 7210-1  
West Palm Beach, Florida 33406

Ron DeSantis  
Governor

Jeanette Nuñez  
Lt. Governor

Noah Valenstein  
Secretary

## State of Florida

### Domestic Wastewater Collection/Transmission Individual Permit

**PERMITTEE:**

City of Hollywood  
Attention: Vivek Galav, P.E.,  
Director of Public Utilities  
1621 N 14th Avenue  
Hollywood, FL 33020

**PERMIT NUMBER:**

HOL #054633-702

**EPGMD LICENSE:**

WW-62820

**ISSUANCE DATE:**

02/26/2021

**EXPIRATION DATE:**

02/25/2026

**COUNTY:**

BROWARD

**PROJECT:**

Washington Park/Lawn  
Acres Sewer Expansion  
(18-7089)

**CONNECTED TO:**

Hollywood

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4 and 62-604, Florida Administrative Code (F.A.C.). The Broward County Environmental Protection & Growth Management Department (EPGMD) issues this permit as a delegated local program of the Florida Department of Environmental Protection (Department).

The above named permittee is hereby authorized to construct the facilities shown on the application and other documents on file with the Department and/or EPGMD and made a part hereof and specifically described as follows:

**DESCRIPTION OF PROJECT: GRAVITY SEWER:** 125 LF of 24" PVC @ 0.08% Minimum Slope (60 Manholes)  
1,406 LF of 18" PVC @ 0.12% Minimum Slope  
1,325 LF of 15" PVC @ 0.15% Minimum Slope  
53 LF of 12" PVC @ 0.22% Minimum Slope  
10,077 LF of 8" PVC @ 0.40% Minimum Slope  
1,761 LF of 8" PVC @ 0.28% Minimum Slope

**TO SERVE:**

85 SFH Units, 40 MFH Units, 851,278 SF Office/Retail/Warehouse, 26,272 SF Auto Service Station, 10,251 SF Place of Worship/Funeral Home, and 2,614 SF Restaurant.

**LOCATION OF PROJECT:**

(Pembroke Rd to Washington St) S 56th Ave, Hollywood, FL 33022

**IN ACCORDANCE WITH:**

The limitations, requirements and other conditions set forth in this permit.

EPGMD License No. WW-62820 has also been issued for this project.

**PERMITTEE:**

City of Hollywood  
Attention: Vivek Galav, P.E.,  
Director of Public Utilities  
1621 N 14th Avenue  
Hollywood, FL 33020

**PERMIT NUMBER:** HOL #054633-702  
**EPGMD LICENSE:** WW-62820  
**ISSUANCE DATE:** 02/26/2021  
**EXPIRATION DATE:** 02/25/2026  
**COUNTY:** BROWARD  
**PROJECT:** Washington Park/Lawn  
Acres Sewer Expansion  
(18-7089)  
**CONNECTED TO:** Hollywood

**PERMIT CONDITIONS:**

1. This permit is subject to the general conditions of Rule 62-4.160, F.A.C., as applicable. This rule is available at the Department's Internet site at: <http://www.dep.state.fl.us/legal/Rules/shared/62-4/62-4.pdf> [62-4.160]
2. Upon completion of construction of the collection/transmission system project, and before placing the facilities into operation for any purpose other than testing for leaks or testing equipment operation, the permittee shall submit to EPGMD Form 65-604.300(8)(b), Request for Approval to Place a Domestic Wastewater Collection/Transmission System into Operation. This form is available at the Department's Internet site at: <http://www.dep.state.fl.us/water/wastewater/dom/dw-forms.htm> [62-604.700(2)]
3. The new or modified collection/transmission facilities shall not be placed into service until EPGMD clears the project for use. [62.604.700(3)]
4. Permit revisions shall only be made in accordance with Rule 62-4.050(4)(s), F.A.C. Request for revisions shall be made to EPGMD in writing and shall include the appropriate fee. Revisions not covered under Rule 62-4.050(4)(s), F.A.C., shall require a new permit. [62-604.600(8)]
5. Abnormal events shall be reported to the Department's West Palm Beach District Office in accordance with Rule 62-604.550, F.A.C. For unauthorized spills of wastewater in excess of 1000 gallons per incident, or where information indicates that public health or the environment may be endangered, oral reports shall be provided to the STATE WATCH OFFICE TOLL FREE NUMBER (800) 320-0519 as soon as practical, but no later than 24 hours from the time the permittee or other designee becomes aware of the circumstances. Unauthorized releases or spills less than 1000 gallons per incident are to be reported orally to the Department's West Palm Beach District Office within 24 hours from the time the permittee, or other designee becomes aware of the circumstances. [62-604.550]

PERMITTEE:

City of Hollywood  
Attention: Vivek Galav, P.E.,  
Director of Public Utilities  
1621 N 14th Avenue  
Hollywood, FL 33020

PERMIT NUMBER: HOL #054633-702  
EPGMD LICENSE: WW-62820  
ISSUANCE DATE: 02/26/2021  
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COUNTY: BROWARD  
PROJECT: Washington Park/Lawn  
Acres Sewer Expansion  
(18-7089)  
CONNECTED TO: Hollywood

Executed in Plantation, Florida

BROWARD COUNTY  
Environmental Protection and Growth Management Department

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Yvel Rocher, P.E., Environmental Program Manager

As delegated agent for:  
State of Florida,  
Department of Environmental Protection

DATE: 02/26/2021



**RIGHT OF ENTRY AND  
TEMPORARY CONSTRUCTION EASEMENT**

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

Owners (s): \_\_\_\_\_

Owner Phone: \_\_\_\_\_

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

**RE:     Water Meter Relocation (City Project No. 13-5119)**

**Agreement:** As part of the City of Hollywood's continuing effort to provide and maintain high quality services to its residents, the Department of Public Utilities will be installing new water mains and new water service lines to the structures within your neighborhood. This project requires the relocation of the existing water meters from the back of your property to the front of the property and re-routing of the water service pipelines within your property.

The City of Hollywood has contracted with \_\_\_\_\_ to perform the work on behalf of the City. We are requesting your cooperation by granting consent to \_\_\_\_\_ to work within your property. This work will be performed at no cost to the property owner(s).

This document shall not be considered a permanent easement. Upon completion of the work, \_\_\_\_\_ will restore the impacted areas to their original conditions, and the portion of the improvements on your property (i.e. the new water service and related appurtenances) will become the property and the sole responsibility of the property owner(s).

Therefore, the undersigned property owner(s) grant consent to the City of Hollywood and \_\_\_\_\_ to enter the above referenced exterior property for the purpose of performing the aforementioned project.

**City of Hollywood, Florida**

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

Steve Joseph, P.E., Director of Public Utilities

**Property Owner(s)**

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

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

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



# FLORIDA DEPARTMENT OF Environmental Protection

Southeast District Office  
3301 Gun Club Road, MSC 7210-1  
West Palm Beach, FL 33406  
561-681-6600

**Ron DeSantis**  
Governor

**Jeanette Nuñez**  
Lt. Governor

**Noah Valenstein**  
Secretary

October 14, 2020

## In the Matter of an Application for Permit by:

Mr. Vivek Galav, P.E., Director of Public Utilities  
City of Hollywood  
P.O. Box 229045  
Hollywood, Florida 33022

Sent by Email:  
[vgalav@hollywoodfl.org](mailto:vgalav@hollywoodfl.org)

**DEP File No.** 0126758-335-DS  
Broward County  
Watermain Replacement Program  
Pembroke Rd. to Washington St. &  
S. 52<sup>nd</sup> Ave. to SR 7 & along S. 52<sup>nd</sup>  
to Monroe St.  
**PWS ID:** 4060642

## NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number 0126758-335-DS to construct water main replacement from Pembroke Rd. to Washington St. & from S. 52<sup>nd</sup> Ave. to SR 7 & along S. 52<sup>nd</sup> to Monroe St. in Broward County, Florida. This permit is issued pursuant to Section(s) 403.087, Florida Statutes.

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) with the Agency Clerk for the Department of Environmental Protection, Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, within 14 days of receipt of this Notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-106.205, F.A.C.

A petition must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
- (c) A statement of how and when the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

- (e) A concise statement of the ultimate facts alleged, including the specific facts which petitioner contends warrant reversal or modification of the Department's action;
- (f) A statement of the specific rules or statutes the petitioner contends requires reversal or modification of the Department's action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
- (g) A statement of the relief sought by petitioner, stating precisely the action that the petitioner wants the Department to take.

A petition that does not dispute the materials facts on which the Department's action is based shall state that no such facts are in dispute and otherwise contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any such final decision of the Department on the petition have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to section 120.68 of the Florida Statutes, by filing a Notice of Appeal pursuant to Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department.

## **EXECUTION AND CLERKING:**

Executed in West Palm Beach, Florida.

### **STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**



October 14, 2020

Norva Blandin, MSEM  
Program Administer  
Permitting and Waste Cleanup Program  
Southeast District

Date

NB/CW/BMZ

Enclosure: Permit No. 0126758-335-DSC

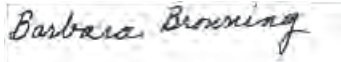
## CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this permit and all copies were sent on the filing date below to the following listed persons:

FDEP SED – [SED.DrinkingWater@floridadep.gov](mailto:SED.DrinkingWater@floridadep.gov); [Bahman.Zangeneh@floridadep.gov](mailto:Bahman.Zangeneh@floridadep.gov);  
[Norva.Blandin@floridadep.gov](mailto:Norva.Blandin@floridadep.gov)  
Broward County Health Department – [BrowardEH@flhealth.gov](mailto:BrowardEH@flhealth.gov)  
Janine M. Alexander, P.E. – Tetra Tech, Inc. – [Janine.alexander@tetrattech.com](mailto:Janine.alexander@tetrattech.com)

## FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.



Clerk

October 14, 2020  
Date

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# FLORIDA DEPARTMENT OF Environmental Protection

Southeast District Office  
3301 Gun Club Road, MSC 7210-1  
West Palm Beach, FL 33406  
561-681-6600

**Ron DeSantis**  
Governor

**Jeanette Nuñez**  
Lt. Governor

**Noah Valenstein**  
Secretary

October 14, 2020

**PERMITTEE:**

Mr. Vivek Galav, P.E.  
Director of Public Utilities  
City of Hollywood  
P.O. Box 229045  
Hollywood, Florida 33022  
Sent by Email:  
[vgalav@hollywoodfl.org](mailto:vgalav@hollywoodfl.org)

**PWS ID NUMBER:** 4060642

**PERMIT NUMBER:** 0126758-335-DS

**DATE OF ISSUE:** October 14, 2020

**EXPIRATION DATE:** October 13, 2025

**COUNTY:** Broward

**PROJECT:** Watermain Replacement Program  
Pembroke Rd. to Washington St. &  
to Monroe St.

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-550, 62-555 and 62-560. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

**TO CONSTRUCT:** Replacement from Pembroke Rd. to Washington St. & from S. 52<sup>nd</sup> Ave. to SR 7 & along S. 52<sup>nd</sup> to Monroe St.

**The proposed project includes construction of:**

Pipe Material and Size	Quantity	Unit
C900 - 4" PVC Water Main	12,781	LF
C900 - 6" PVC Water Main	7,786	LF
C900 - 8" PVC Water Main	10,755	LF
C900 - 10" PVC Water Main	23	LF
C900 - 12" PVC Water Main	7,432	LF
C900 - 16" PVC Water Main	2,522	LF
Class 52 - 4" DIP Water Main	847	LF
Class 52 - 6" DIP Water Main	226	LF
Class 52 - 12" DIP Water Main	569	LF
4" Gate Valves	33	EA
6" Gate Valves	15	EA
8" Gate Valves	51	EA
10" Gate Valves	1	EA
12" Gate Valves	28	EA
16" Gate Valves	4	EA
Fire Hydrant Assemblies	34	EA
Sampling Points	50	EA

**The proposed project is located:** Between Pembroke Road to the South, Washington St. and along S. 56<sup>th</sup> Ave. up to Monroe St., to the North, S 56<sup>th</sup> Ave. and S 52nd Ave. to the East, SR 7., to the West, Broward County, Florida.

**IN ACCORDANCE WITH:** The construction permit application, and engineering drawings sheets G-000 through G-002, C-101 through C-131, C-146, and C-156, C-236 through C-241 dated October 8, 2020, prepared by Janine M. Alexandra, P.E. Tetra Tech, and received by DEP on October 8, 2020. Additional information including revised application and processing fee dated October 12, 2020 prepared by Janine M. Alexandra, P.E. Tetra Tech, and received by DEP on October 12, 2020.

Work must be conducted in accordance with the General and Specific Conditions, attached hereto.

Issued this 14<sup>th</sup> day of October 2020

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



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Norva Blandin, MSEM  
Program Administrator  
Permitting and Waste Cleanup Program  
Southeast District

NB/CW/BMZ

Attachments: General Conditions, Regulatory Section, Construction Standards, Operational Requirements, Monitoring Provisions, Clearance Requirements

Electronic Copies Furnished to:

FDEP SED – [SED.DrinkingWater@floridadep.gov](mailto:SED.DrinkingWater@floridadep.gov); [Bahman.Zangeneh@floridadep.gov](mailto:Bahman.Zangeneh@floridadep.gov);  
[Norva.Blandin@floridadep.gov](mailto:Norva.Blandin@floridadep.gov)  
Broward County Health Department – [BrowardEH@flhealth.gov](mailto:BrowardEH@flhealth.gov)  
Janine M. Alexander, P.E. – Tetra Tech, Inc. – [Janine.alexander@tetrattech.com](mailto:Janine.alexander@tetrattech.com)

## A. General Conditions

The permittee shall be aware of and operate under the Permit Conditions below. These applicable conditions are binding upon the permittee and enforceable pursuant to Chapter 403, Florida Statutes. [F.A.C. Rule 62-555.533(1)]

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times (reasonable time may depend on the nature of the concern being investigated), access to the premises where the permitted activity is located or conducted to:



- a. Have access to and copy any records that must be kept under conditions of the permit;
  - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
  - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
  - a. A description of and cause of noncompliance; and
  - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.
9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.
11. This permit is transferable only upon Department approval in accordance with Rule 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
  - a. Determination of Best Available Control Technology (BACT)
  - b. Determination of Prevention of Significant Deterioration (PSD)



- c. Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
- d. Compliance with New Source Performance Standards

14. The permittee shall comply with the following:

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
- c. Records of monitoring information shall include:
  - i. the date, exact place, and time of sampling or measurements;
  - ii. the person responsible for performing the sampling or measurements;
  - iii. the dates analyses were performed;
  - iv. the person responsible for performing the analyses;
  - v. the analytical techniques or methods used;
  - vi. the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

## **B. Regulatory Section**

- 1. All construction must be in accordance with this permit. Before commencing work on project changes for which a construction permit modification is required per 62-555.536(1), the permittee shall submit to the Department a written request for a permit modification. Each such request shall be accompanied by one copy of a revised construction permit application, the proper processing fee and one copy of either a revised preliminary design report or revised drawings, specifications and design data. [F.A.C. Rule 62-555.536].
- 2. Permitted construction or alteration of public water supply systems must be supervised during construction by a professional engineer registered in the State of Florida if the project

was designed under the responsible charge of a professional engineer licensed in the State of Florida. The permittee must retain the service of a professional engineer registered in the State of Florida to observe that construction of the project is in accordance with the engineering plans and specifications as submitted in support of the application for this permit. [F.A.C. Rule 62-555.520(3)].

3. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoe remains, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee, or other designee, should contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at 850.245.6333 or 800.847.7278, as well as the appropriate permitting agency office. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources and the permitting agency. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.
4. If delays will cause project completion to extend beyond the expiration date of this permit, the permittee shall submit to the Department a request to extend the expiration date of this permit including the appropriate processing fee. This request shall specify the reasons for the delay and shall be submitted to the Department for approval prior to the expiration date of this permit. Note that no specific construction permit shall be extended so as to remain in effect longer than five years. [F.A.C. Rule 62-555.536(4)]. {OPTIONAL}
5. In accordance with General Condition #11 of this permit, this permit is transferable only upon Department approval. Persons proposing to transfer this permit must apply jointly for a transfer of the permit within 30 days after the sale or legal transfer of ownership of the permitted project that has not been cleared for service by the Department using form, 62-555.900(8), Application for Transfer of a PWS Construction Permit along with the appropriate fee. [F.A.C. Rule 62-555.536(5)]
6. This permit satisfies Drinking Water permitting requirements only and does not authorize construction or operation of this facility prior to obtaining all other necessary permits from other program areas within the Department, or required permits from other state, federal, or local agencies.
7. If gasoline contamination is found at the construction site, work shall be stopped and the proper authorities notified. With the approval of the Department, ductile iron pipe and fittings, and solvent resistant gaskets materials shall be used in the contaminated area. The ductile pipe shall be used in the contaminated area. The ductile iron pipe shall extend 100 feet beyond any solvent noted. Any contaminated soil that is excavated shall be placed on an impermeable mat, covered with waterproof covering, and held for disposal. If the site cannot be properly cleaned, then consultation with the Department is necessary prior to continuing with the project construction.

8. This permit does not constitute approval of construction on jurisdictional wetland areas; therefore, such approval must be obtained separately from the Water Management District or from DEP ERP Section, as applicable, Permittee shall provide a copy of the permit approval to the Department if water main installation involves activities on wetlands.
9. Permittee shall ensure that the well and drinking water treatment facilities will be protected to prevent tampering, vandalism, and sabotage as required by Rule 62-555.315(1) & 62-555.320(5), F.A.C.

### **C. Construction Standards**

1. All products, including paints, which shall come into contact with potable water, either directly or indirectly, shall conform to National Sanitation Foundation (NSF) International, Water Chemicals Codex, Food Chemicals Codex, American Water Works Association (AWWA) Standards and the Food and Drug Administration, as provided in Rule 62-555.320(3), F.A.C.
2. Water supply facilities, including mains, pipe, fittings, valves, fire hydrants and other materials shall be installed in accordance with the latest applicable AWWA Standards and Department rules and regulations. The system shall be pressure and leak tested in accordance with AWWA Standard C600 C603, or C605, as applicable, and disinfected in accordance with AWWA Standard C651-653, as well as in accordance with Rule 62-555.340, F.A.C.
3. The installation or repairs of any public water system, or any plumbing in residential or nonresidential facilities providing water for human consumption, which is connected to a public water system shall be lead free in accordance with Rule 62-555.322, F.A.C.
4. The new or altered aboveground piping at the drinking water treatment plant shall be color coded and labeled as recommended in Section 2.14 of "Recommended Standards for Water Works, 1997 Edition". [F.A.C. Rule 62-555.320(10)]
5. Permittee shall ensure that there shall be no cross-connection with any non-potable water source in accordance with Rule 62-555.360, F.A.C.

### **D. Operational Requirements**

1. The supplier of water shall operate and maintain the public water system so as to comply with applicable standards in F.A.C. Rule 62-550 and 62-555.350.
2. The permittee shall provide an operation and maintenance manual for the new or altered treatment facilities to fulfill the requirements under subsection 62-555.350(13), F.A.C. The manual shall contain operation and control procedures, and preventative maintenance and repair procedures, for all plant equipment and shall be made available for reference at the

plant or at a convenient location near the plant. Bound and indexed equipment manufacturer manuals shall be considered sufficient to meet the requirements of the subsection.

4. The permittee shall have complete record drawings produced for the project in accordance with Rule 62-555.530(4), F.A.C
5. The permittee or suppliers of water shall telephone the State Warning Point (SWP), at 1-800-320-0519 immediately (i.e., within two hours) after discovery of any actual or suspected sabotage or security breach, or any suspicious incident, involving a public water system in accordance with the F.A.C. Rule 62-555.350(10).

## **E. Monitoring Provisions**

1. Permittee shall follow the guidelines of Chapters 62-550, 62-555, and 62-560, F.A.C., regarding public drinking water system standards, monitoring, reporting, permitting, construction, and operation.
2. The water treatment plant shall maintain throughout the distribution system a minimum combined chlorine residual of 0.6 mg/l or its equivalent. A minimum system pressure of 20 psi must be maintained throughout the system. Also, safety equipment shall be provided and located outside of chlorine room.

## **F. Clearance Requirements**

1. The permittee must instruct the engineer of record to request system clearance from the Department within sixty (60) days of completion of construction, testing and disinfecting the system. Bacteriological test results shall be considered unacceptable if the test were completed more than 60 days before the Department received the results. [F.A.C. Rule 62-555.340(2)(c)]

Permitted construction or alteration of a public water system may not be placed into service until a letter of clearance has been issued by this Department. [F.A.C. Rule 62-555.345]

2. Prior to placing this project into service, Permittee shall submit, at a minimum, all of the following to the Department for evaluation and approval for operation, as provided in Rules 62-555.340 and 62-555.345, F.A.C.:
  - a. the engineer's *Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components Into Operation* {DEP Form 62-555.900(9)};
  - b. certified record drawings, if there are any changes noted for the permitted project.
  - c. two consecutive days of satisfactory bacteriological analytical results (see paragraph 3 below).

3. The new facilities shall be cleaned, disinfected, and bacteriologically cleared in accordance with Chapter 62-555, F.A.C. The bacteriological clearance data representative distribution system (in accordance with the instructions for Bacteriological Sampling Locations shown below) shall be submitted to the Department with the engineer's certification of construction completion. [Section 62-555.340 and 62-555.315(6)(b), F.A.C.]

**Bacteriological Sampling Locations:** Copies of satisfactory bacteriological analyses taken 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) Standard C 651-92 as follows:

- *The endpoint of the proposed addition;*
- *Any water lines branching off a main extension;*
- *Every 1,200 feet of water main;*
- *Each location shall be sampled on two separate days (at least 6 hours apart) with sample point locations and chlorine residual readings **clearly indicated** on the report and/or drawings.*
- *Bacteriological sample results will be considered unacceptable if the tests were completed more than 60 days before the Department receives the results.*

In order to facilitate the issuance of a letter of clearance, the Department requests that all of the above information be submitted as one package.





# **APPENDIX C**

# **FORMS FOR** **PRIVATE PROPERTY** **OWNERS**





**RIGHT OF ENTRY AND  
TEMPORARY CONSTRUCTION EASEMENT**

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

Owners (s): \_\_\_\_\_

Owner Phone: \_\_\_\_\_

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

**RE:     Water Meter Relocation (City Project No. 13-5119)**

**Agreement:** As part of the City of Hollywood's continuing effort to provide and maintain high quality services to its residents, the Department of Public Utilities will be installing new water mains and new water service lines to the structures within your neighborhood. This project requires the relocation of the existing water meters from the back of your property to the front of the property and re-routing of the water service pipelines within your property.

The City of Hollywood has contracted with \_\_\_\_\_ to perform the work on behalf of the City. We are requesting your cooperation by granting consent to \_\_\_\_\_ to work within your property. This work will be performed at no cost to the property owner(s).

This document shall not be considered a permanent easement. Upon completion of the work, \_\_\_\_\_ will restore the impacted areas to their original conditions, and the portion of the improvements on your property (i.e. the new water service and related appurtenances) will become the property and the sole responsibility of the property owner(s).

Therefore, the undersigned property owner(s) grant consent to the City of Hollywood and \_\_\_\_\_ to enter the above referenced exterior property for the purpose of performing the aforementioned project.

**City of Hollywood, Florida**

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

Steve Joseph, P.E., Director of Public Utilities

**Property Owner(s)**

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

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

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





## **APPENDIX D**

# **DOH CONTAMINATED SITES LISTING**



## Search Results

*DEP Cleanup Sites: 4 found.*

**ALL TOOL RENTAL INC**

6401 PEMBROKE RD

HOLLYWOOD, FL 33023

Facility Id: 9063876

**ACTIVE Petroleum Cleanup**[Watch This Site](#)[Documents](#)**Days Dry Cleaners**

5232 Pembroke Rd

Hollywood, FL 33021

Facility Id: ERIC\_4194

**ONHOLD Other Cleanup**[Watch This Site](#)[Documents](#)**La Mar 1 Hour Dry Cleaners**

6430 Pembroke Rd

Miramar, FL 33023

Facility Id: ERIC\_4109

**ONHOLD Other Cleanup**[Watch This Site](#)[Documents](#)**TIRE KINGDOM**

1001 S STATE HWY 7

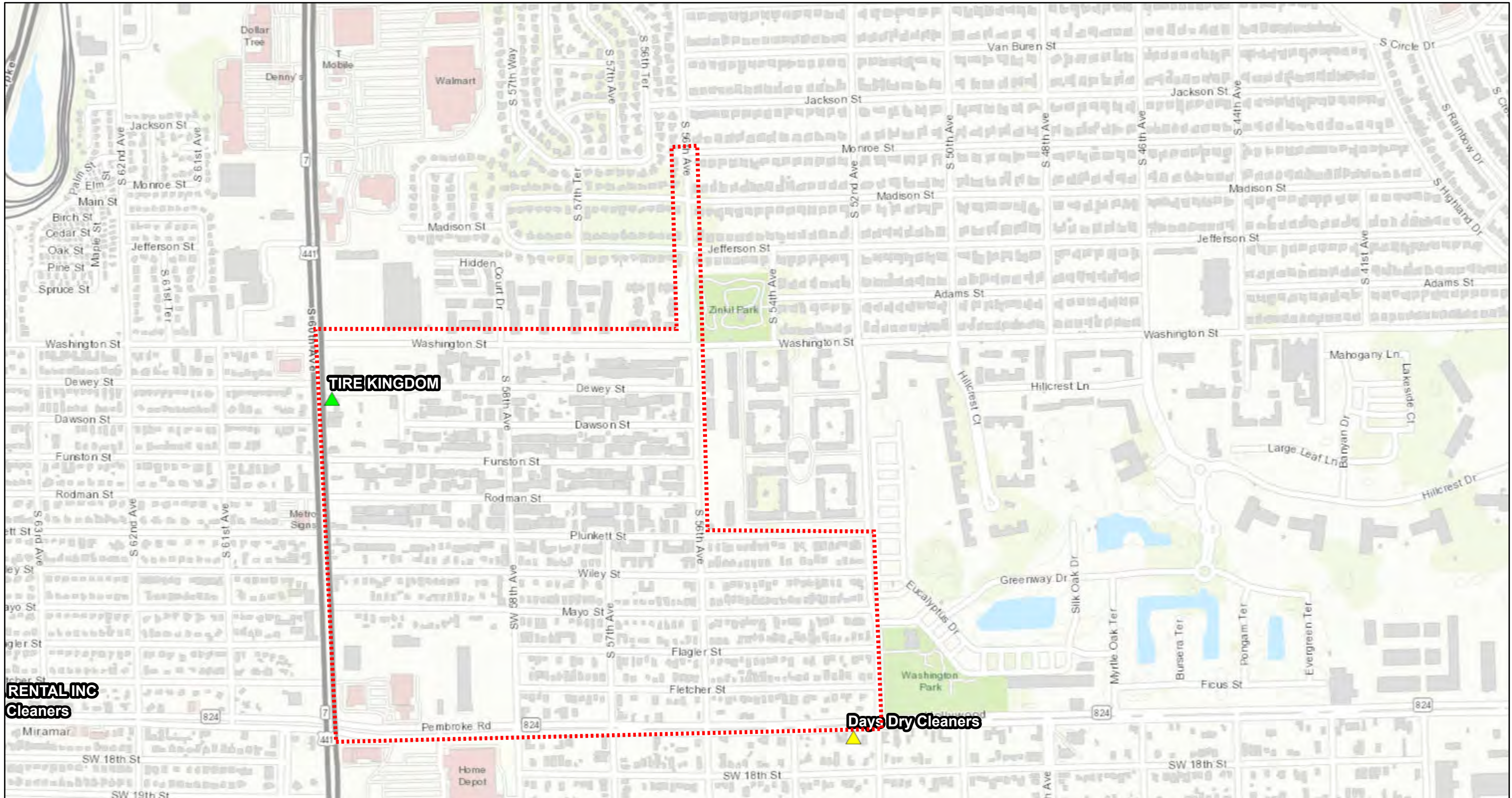
WEST HOLLYWOOD, FL 33023

Facility Id: 8627866

**PENDING Petroleum Cleanup**[Watch This Site](#)[Documents](#)







# Contamination Locator Map (CLM) Embedded Map

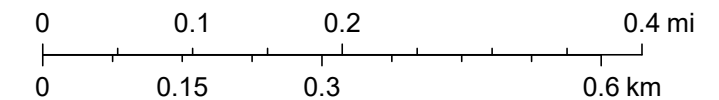


June 30, 2020

## DEP Cleanup Sites - Contamination Locator Map

-  BROWNFIELD SITES
-  PETROLEUM
-  SUPERFUND
-  OTHER WASTE CLEANUP

1:9,028



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, FDEP

Map created by Map Direct, powered by ESRI.

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# **APPENDIX E**

# **SUBSURFACE UTILITY** **EXCAVATION (SUE)** **REPORTS**



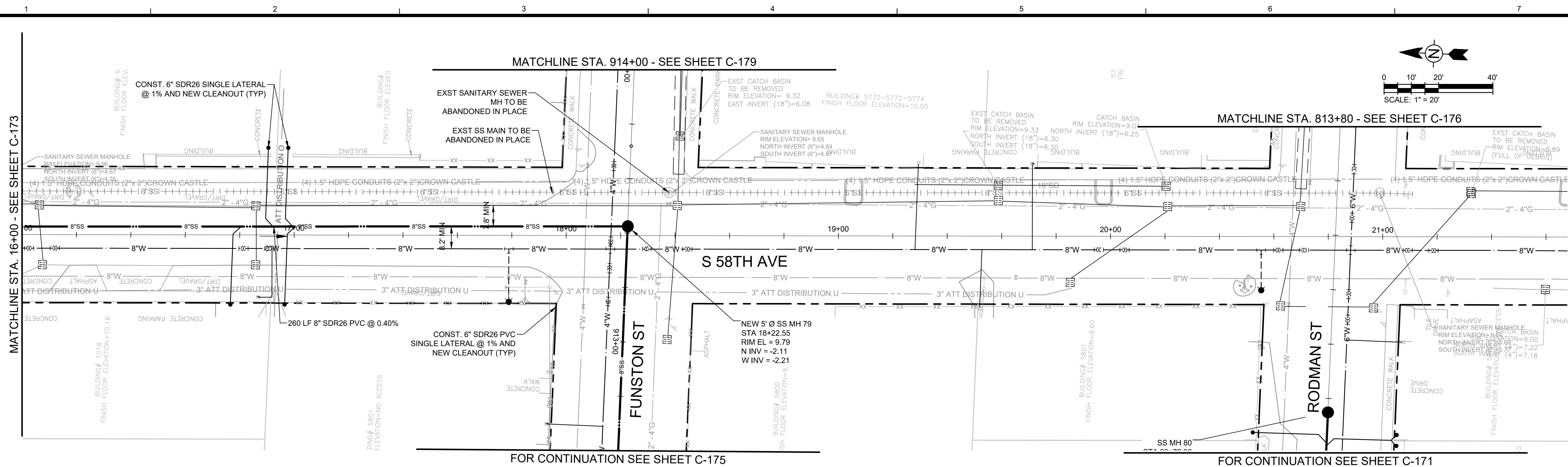
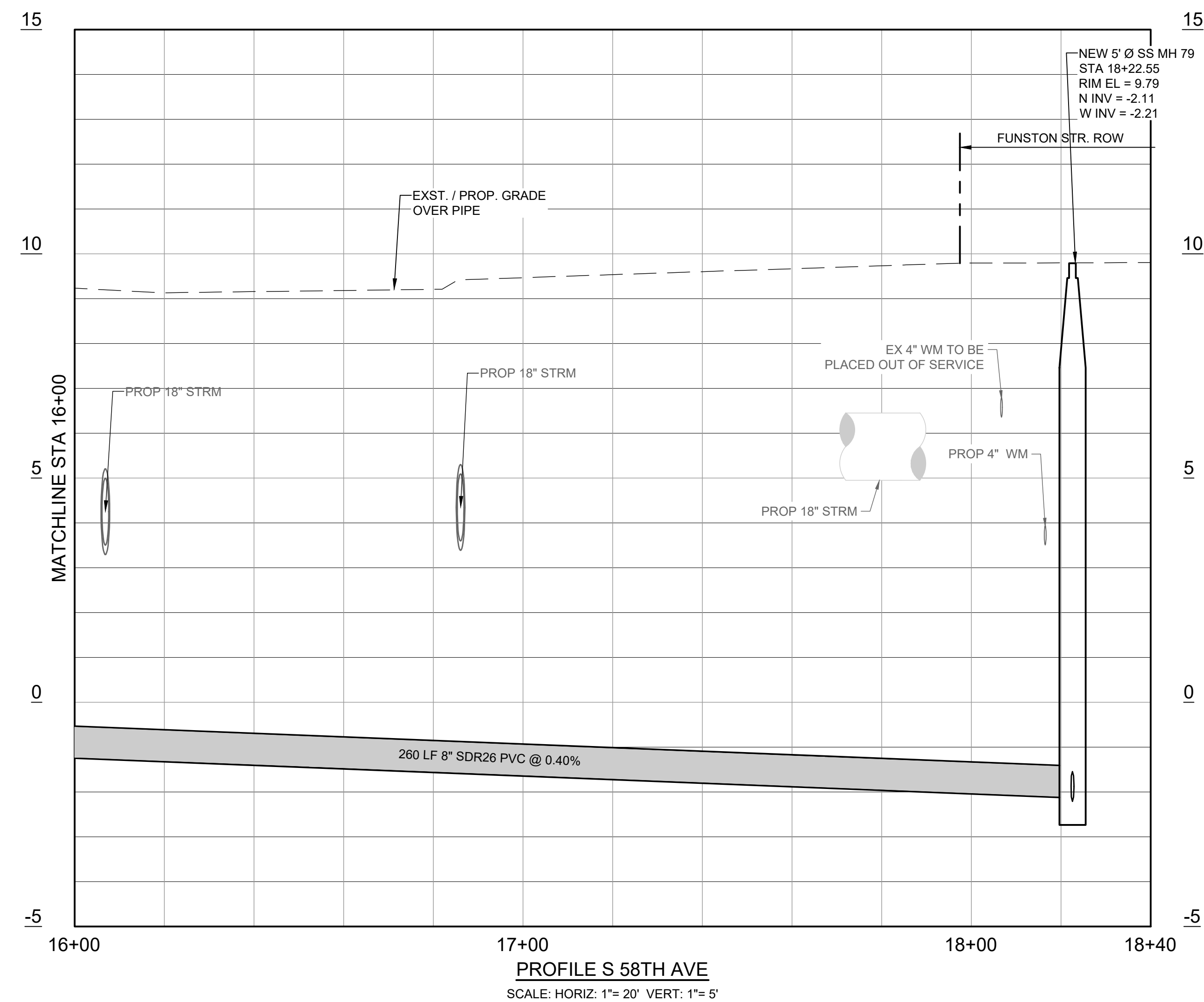


# PROJECT: TETRATECH HOLLYWOOD 09815.00

TESTHOLE #	UTILITY	UTILITY OWNER	SIZE & MATERIAL	DIRECTION	COVER DEPTH	COMMENTS
TH 1	FIBER OPTIC CABLE	CROWN CASTLE	UNKNOWN	NORTH / SOUTH	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 10.68
TH 2	GAS	TECO	2" STEEL	NORTH / SOUTH	2.36	UTILITY VERIFIED
TH 3	GAS	TECO	2" STEEL	NORTH / SOUTH	2.7	UTILITY VERIFIED
TH 4	BURIED TELEPHONE	ATT	2 X 1" DBC	NORTH / SOUTH	2	UTILITY VERIFIED
TH 5	GAS	TECO	2" STEEL	NORTH / SOUTH	2.6	UTILITY VERIFIED
TH 6	FIBER OPTIC CABLE	CROWN CASTLE	2" PE	NORTH / SOUTH	7.2	UTILITY VERIFIED
TH 7	FIBER OPTIC CABLE	CROWN CASTLE	UNKNOWN	NORTH / SOUTH	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 10.78
TH 8	GAS	TECO	2" STEEL	EAST / WEST	2.86	UTILITY VERIFIED
TH 9	GAS	TECO	2" STEEL	EAST / WEST	2.74	UTILITY VERIFIED
TH 10	WATERMAIN	HOLLYWOOD	16" CIP	EAST / WEST	3.92	UTILITY VERIFIED
TH 11	FIBER OPTIC CABLE	ATT	4 X 4" PVC	NORTH / SOUTH	4.48	UTILITY VERIFIED
TH 12	FIBER OPTIC CABLE	CROWN CASTLE	4" PE	NORTH / SOUTH	4.48	UTILITY VERIFIED
TH 13	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 10.10
TH 13A	UNKNOWN	UNKNOWN	2" PVC	EAST / WEST	3.05	UTILITY VERIFIED
TH 14	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 11.27
TH 14A	STREET LIGHT	UNKNOWN	2" PVC	EAST / WEST	1.44	UTILITY VERIFIED
TH 15	BURIED TELEPHONE	ATT	4 X 4" PVC	EAST / WEST	2.7	UTILITY VERIFIED
TH 15A	BURIED TELEPHONE	ATT	UNKNOWN	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 4.11
TH 16	WATERMAIN	HOLLYWOOD	12"	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 4.36
TH 17	WATERMAIN	HOLLYWOOD	UNKNOWN	NORTH / SOUTH	N/A	NO TESTHOLE PERFORMED. NO WATERMAIN AT THIS LOCATION
TH 18	BURIED TELEPHONE	ATT	2 X 4" PVC	EAST / WEST	3.74	UTILITY VERIFIED
TH 18A	BURIED TELEPHONE	ATT	UNKNOWN	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 8.60
TH 19	WATERMAIN	HOLLYWOOD	12"	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 4.36
TH 20	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 10.20
TH 21	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 11.70
TH 22	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 11.24
TH 23	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 13.10
TH 24	BURIED TELEPHONE	ATT	2 X 4" PVC	EAST / WEST	1.8	UTILITY VERIFIED
TH 24A	BURIED TELEPHONE	ATT	UNKNOWN	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 3.30
TH 25	WATERMAIN	HOLLYWOOD	12"	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 5.00
TH 26	BURIED TELEPHONE	ATT	UNKNOWN	NORTH / SOUTH	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 2.90
TH 27	BURIED TELEPHONE	ATT	UNKNOWN	EAST / WEST	SEE COMMENTS	NO TESTHOLE PERFORMED / UTILITY SCANNED. ELECTRONIC DEPTH = 3.02
TH 28	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 13.00
TH 28A	STREET LIGHT	UNKNOWN	2" PVC	EAST / WEST	2.08	UTILITY VERIFIED
TH 29	FIBER OPTIC CABLE	CENTURY LINK	UNKNOWN	EAST / WEST	SEE COMMENTS	UNABLE TO LOCATE VERTICALLY. PROBED TO A DEPTH OF 10.40





[illegible]

CITY OF HOLLYWOOD  
WATER MAIN REPLACEMENT PEMBERO RD TO HOLLYWOOD BLVD  
FROM N 52 ND AND N 56 TH AVE TO S R. 441 AND WASHINGTON  
PARKLAWN ACRES SEPTIC TO SEWER CONVERSION

Project No.:	200-16428-17001 200-16428-18001
Designed By:	JMA
Drawn By:	AE
Checked By:	KC, JMA

C-172  
Sheet

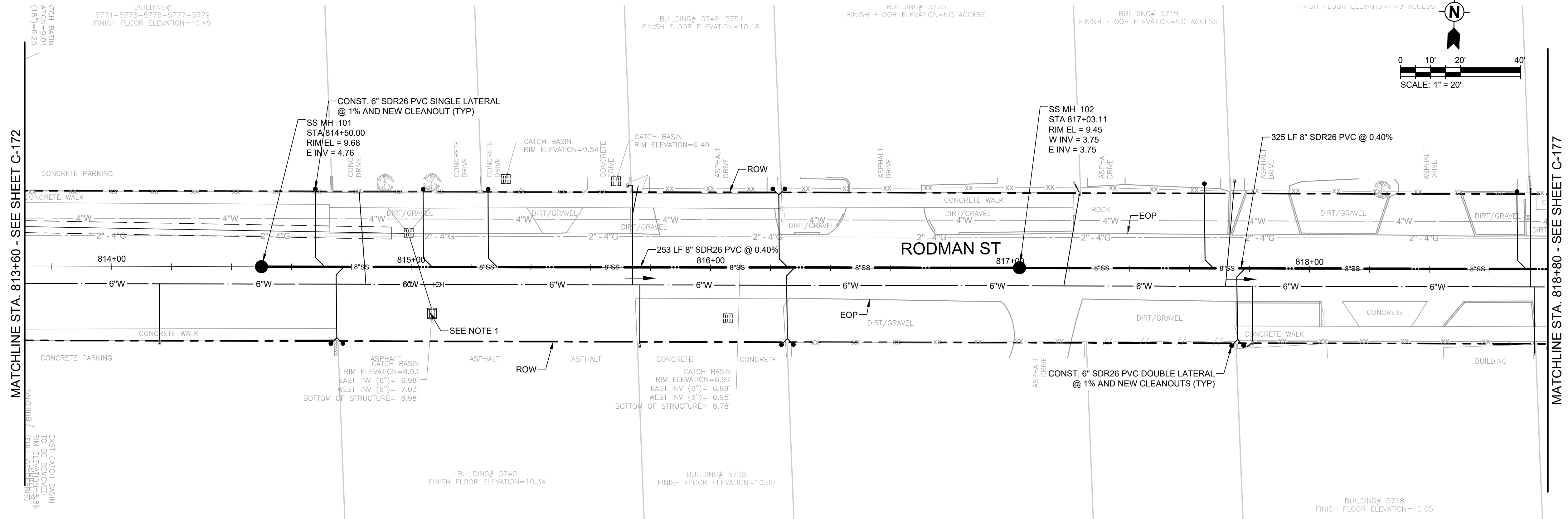
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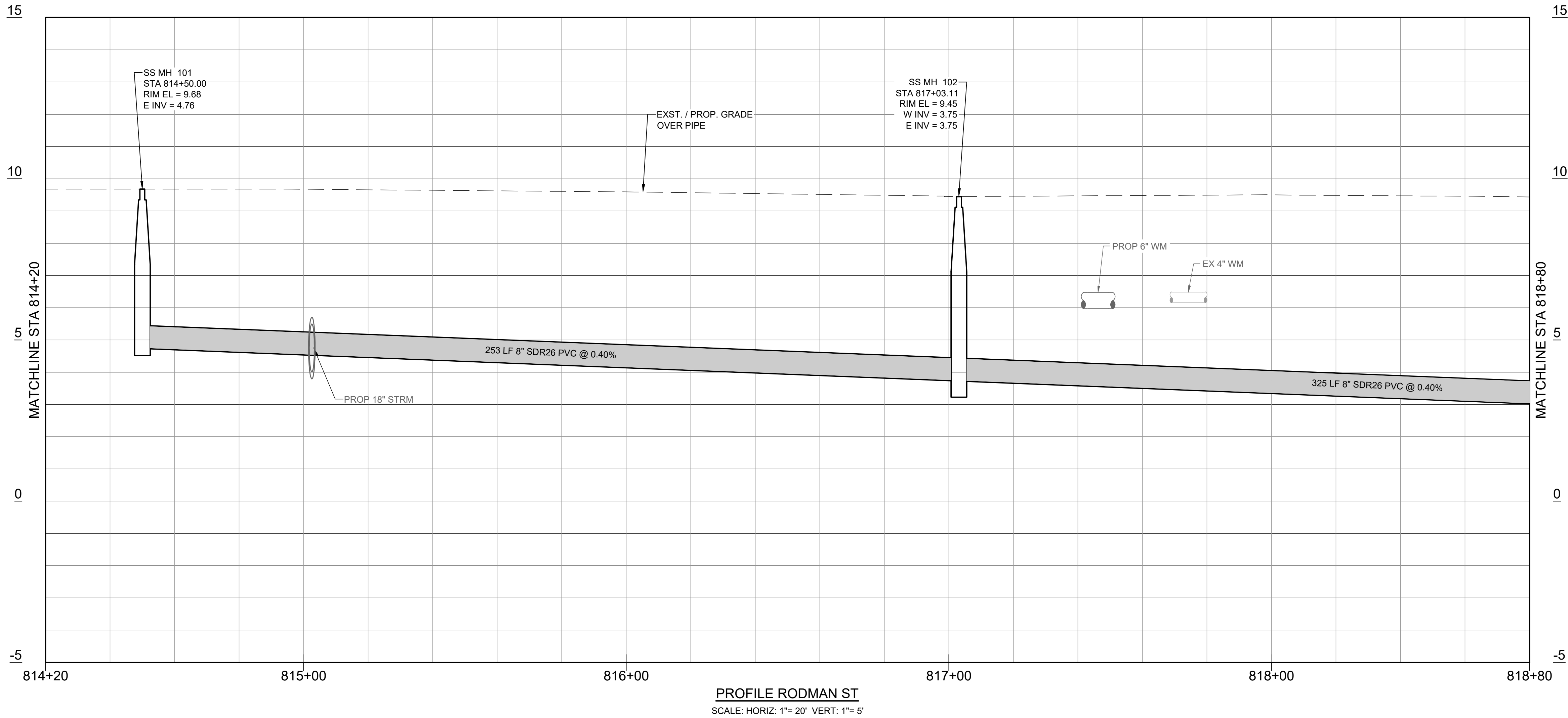




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**NOTE:**  
1. REFER TO WASHINGTON PARK DRAINAGE IMPROVEMENTS PHASE 1 PLANS FOR ADDITIONAL STORM UTILITY INFORMATION



TETRA TECH

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www.tetratech.com

4601 SHERIDAN STREET, SUITE 212  
HOLLYWOOD, FLORIDA 33021  
PHONE: (954) 364-1753 FAX: (954) 308-3512

Jamie M. Alexander, P.E.  
P.E. No. 59244, FL

DATE



MARK	DATE	DESCRIPTION	BY

CITY OF HOLLYWOOD

WATER MAIN REPLACEMENT PEMBROKE RD TO HOLLYWOOD BLVD  
FROM N. 52 ND AND N. 56 TH AVE TO S.R. 441 AND WASHINGTON  
PARK/LAWN ACRES SEPTIC TO SEWER CONVERSION

SANITARY SEWER PLAN  
AND PROFILE RODMAN ST

Project No.:	200-16428-17001
Designed By:	JMA
Drawn By:	AE
Checked By:	KC, JMA

C-176

Sheet

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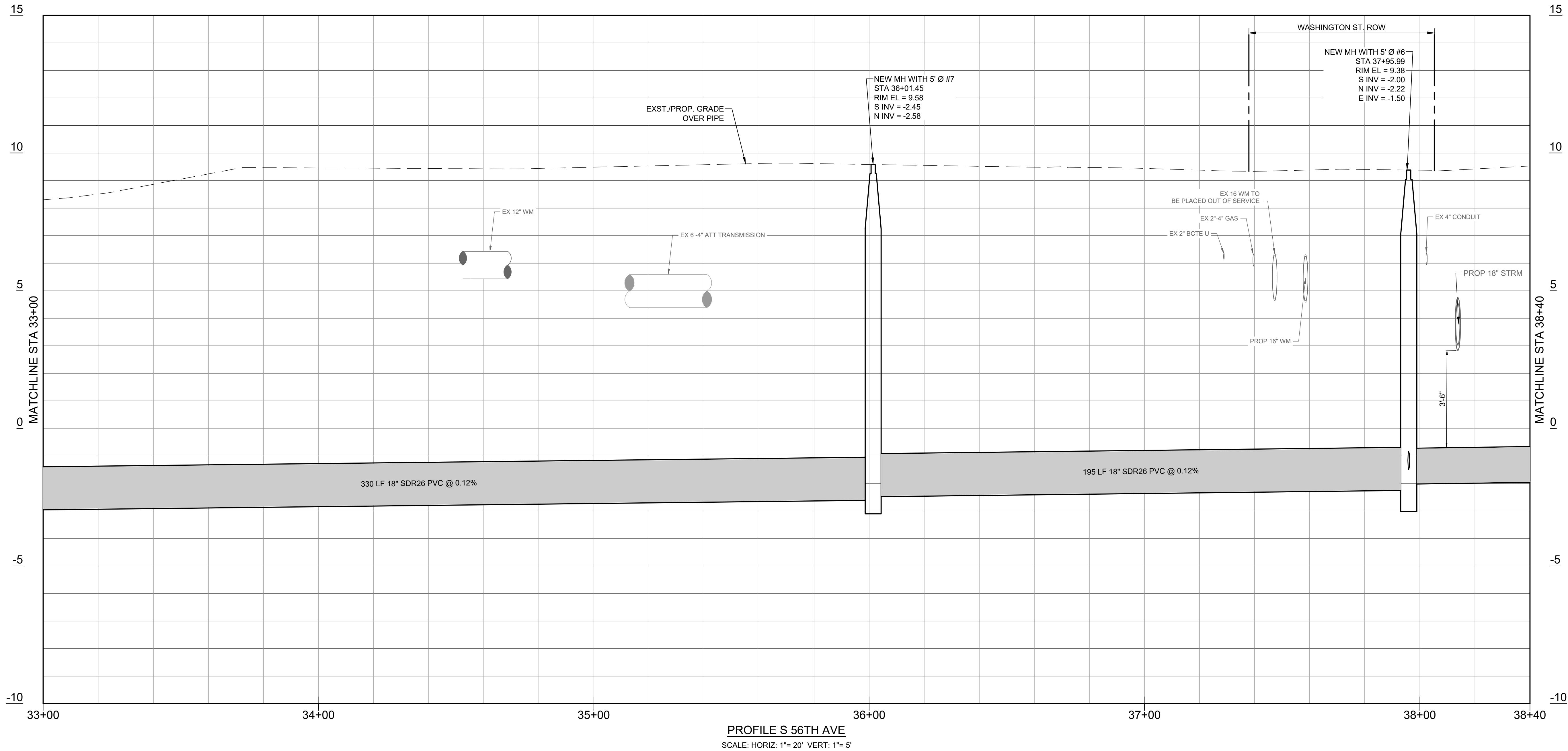
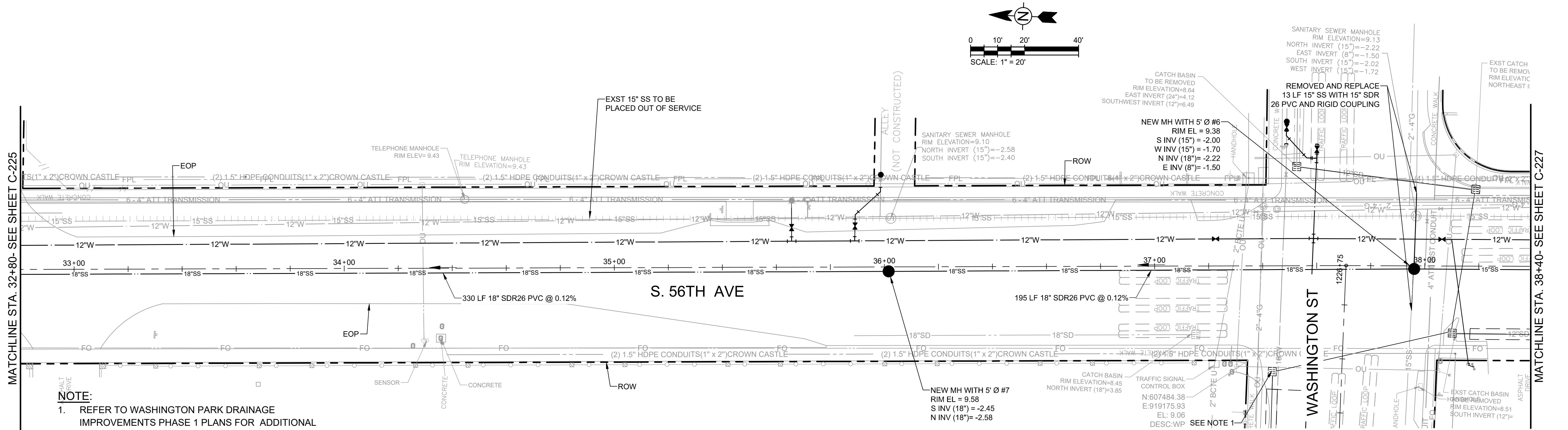
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DATE: \_\_\_\_\_  
BY: \_\_\_\_\_

**CITY OF HOLLYWOOD**  
WATER MAIN REPLACEMENT PEMBROKE RD TO HOLLYWOOD BLVD  
FROM N. 52 ND AND N. 56 TH AVE TO S.R. 441 AND WASHINGTON  
PARK/LAWN ACRES SEPTIC TO SEWER CONVERSION

**SANITARY SEWER PLAN  
AND PROFILE S. 56TH AVE**

MARK	DATE	DESCRIPTION	BY
	2/17/12	REVISIONS PER DOH & COH UTILITIES COMMENTS	AM/FKC
	7/27/12	REVISIONS COH BUILDING DEPT. COMMENTS	AM/FKC

Project No.: 200-16428-17001  
Designed By: JMA  
Drawn By: AE  
Checked By: JAKC

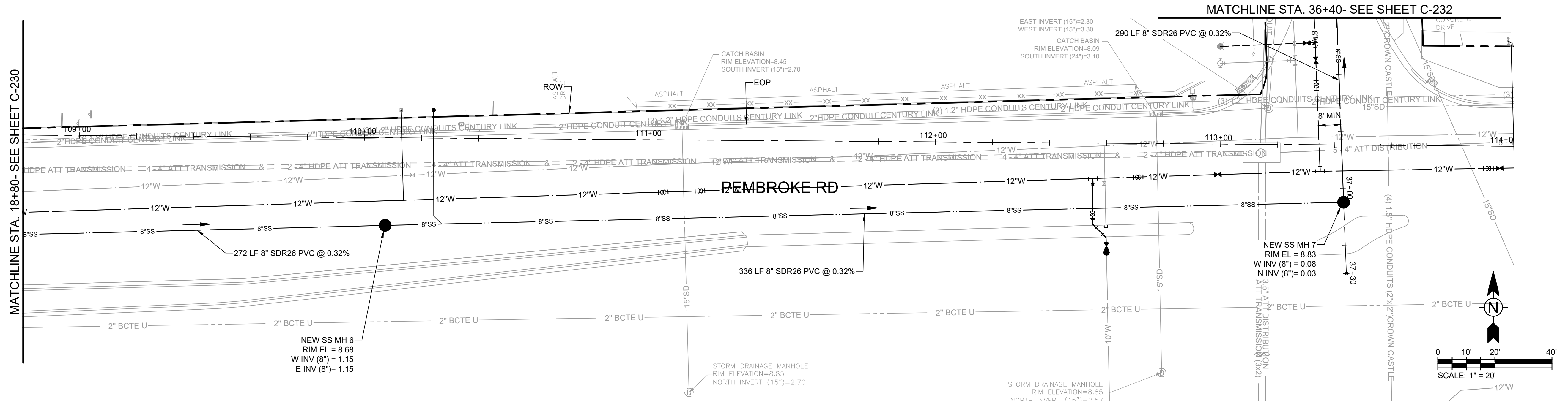
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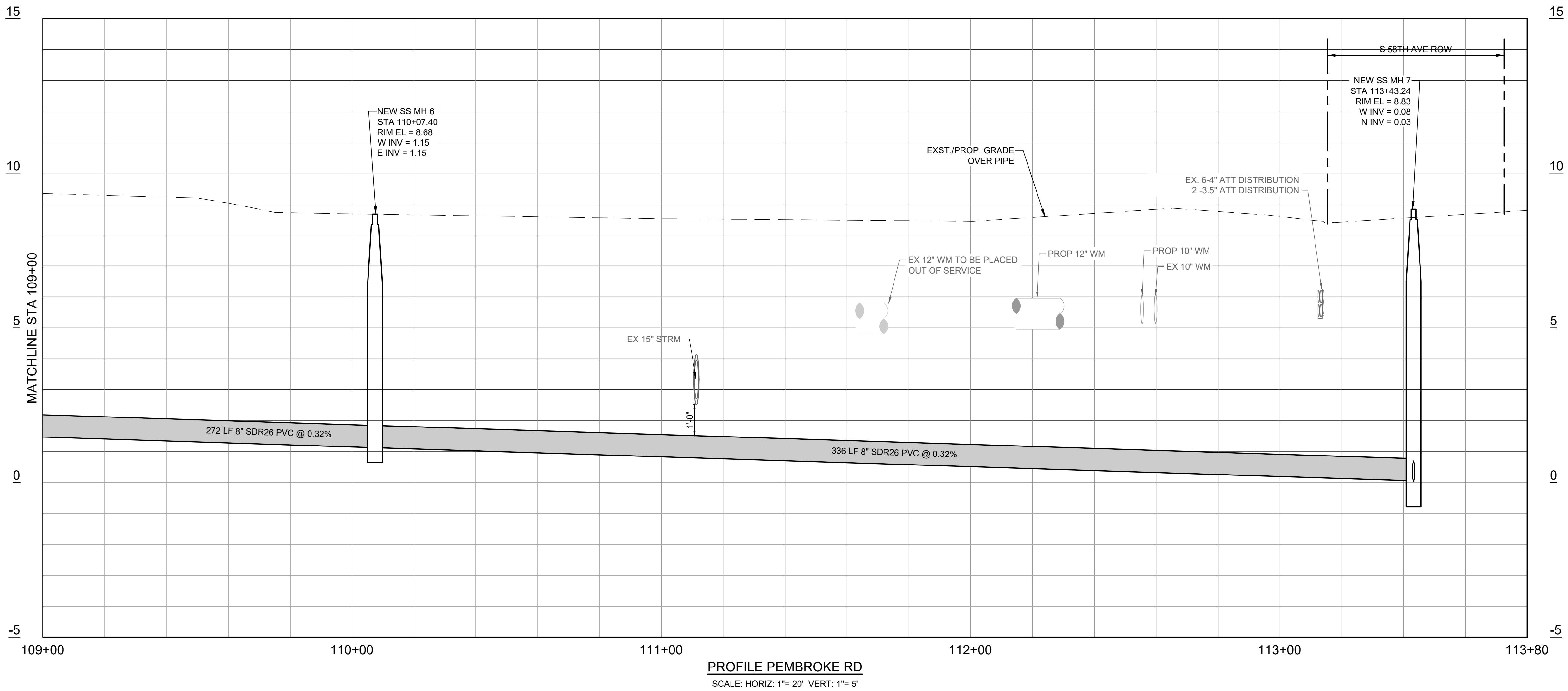





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- NOTE:**
- REFER TO WASHINGTON PARK DRAINAGE IMPROVEMENTS PHASE 1 PLANS FOR ADDITIONAL STORM UTILITY INFORMATION.
  - CONTRACTOR TO VERIFY EXISTING LATERAL LOCATIONS.





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JOSEPH M. P. CACERO, P.E.  
P.E. No. 59278, FL

1401 E. Broward Blvd., St. 302  
Fort Lauderdale, FL 33301  
Engineering Business No. 2429

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



CITY OF HOLLYWOOD  
FLORIDA

MARK	DATE	DESCRIPTION	BY
	2/17/12	REVISIONS PER DOH & COH UTILITIES COMMENTS	AMW/KC
	7/27/12	REVISIONS COH BUILDING DEPT. COMMENTS	AMW/KC

CITY OF HOLLYWOOD

WATER MAIN REPLACEMENT PEMBROKE RD TO HOLLYWOOD BLVD  
FROM N. 52 ND AND N. 56 TH AVE TO S.R. 441 AND WASHINGTON  
PARK/LAWN ACRES SEPTIC TO SEWER CONVERSION

**SANITARY SEWER PLAN  
AND PROFILE PEMBROKE RD**

Project No.: 200-16428-17001  
200-16428-18001

Designed By: JMA

Drawn By: TM, AE

Checked By: KC, JMA

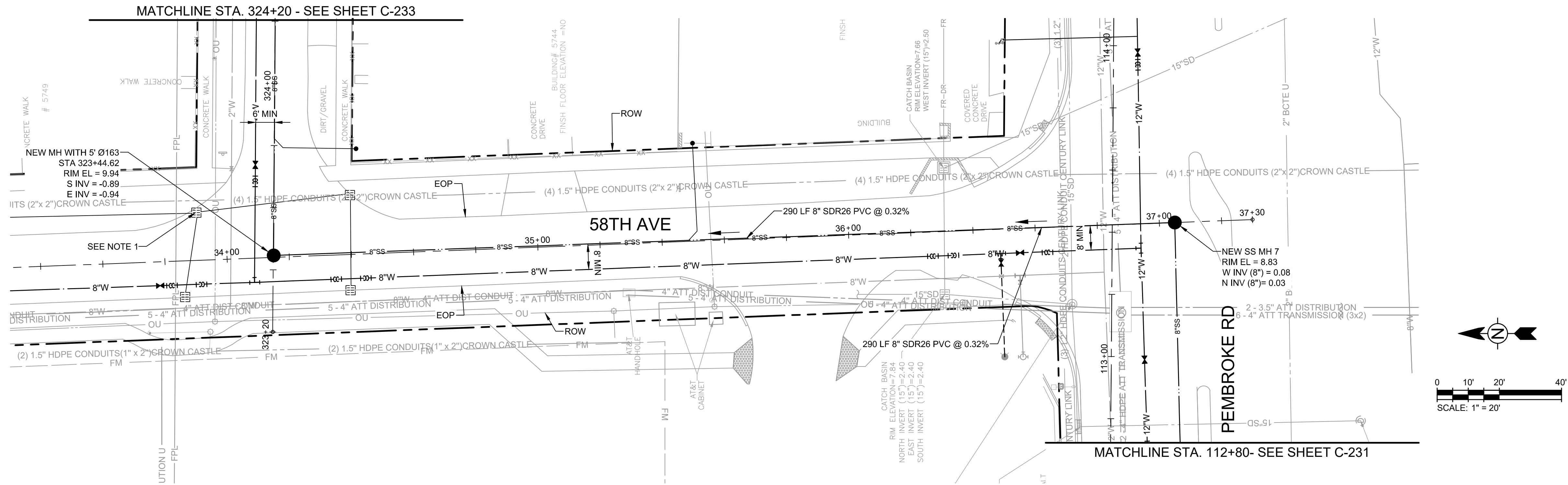
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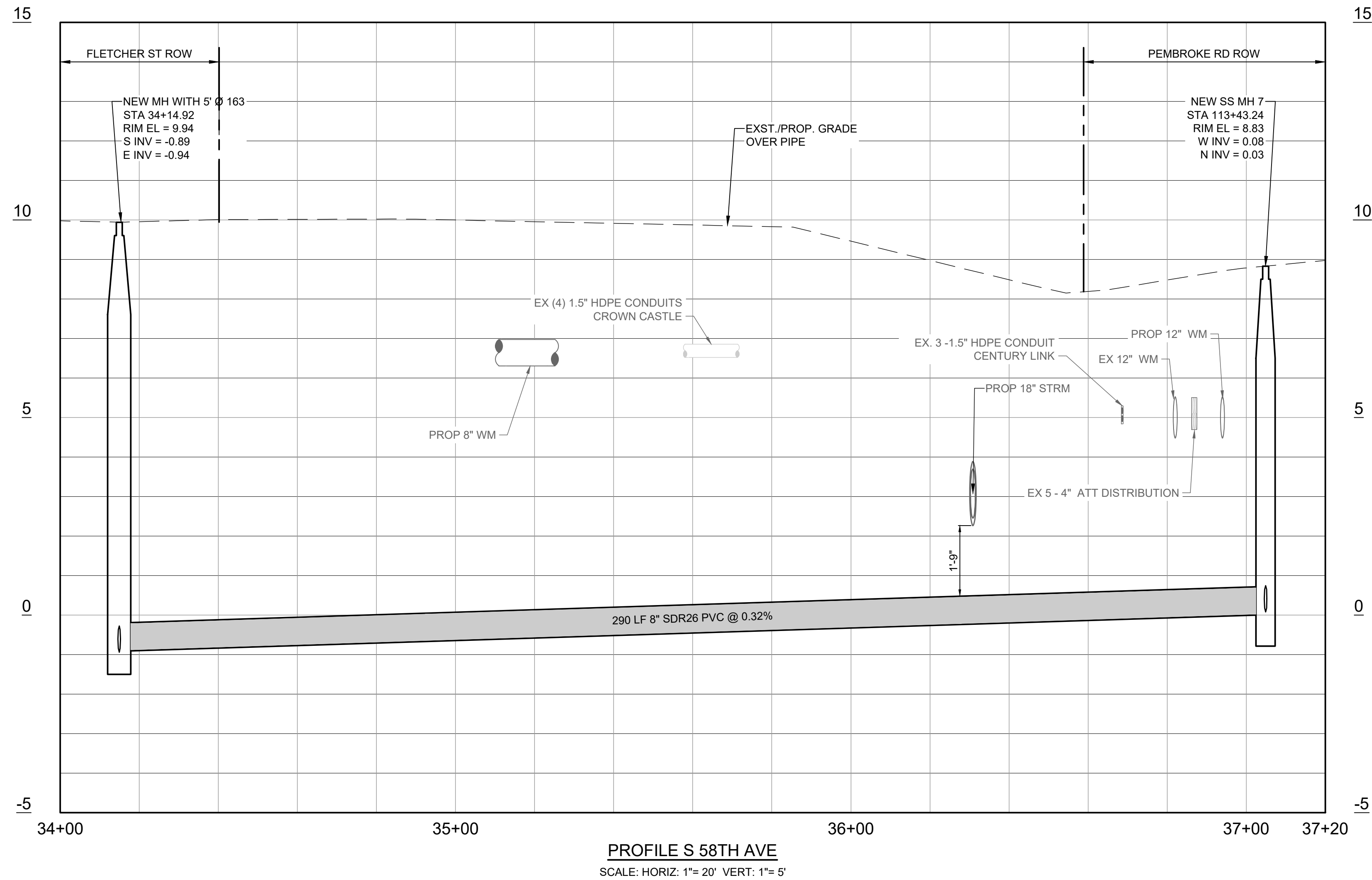
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- NOTE:**
1. REFER TO WASHINGTON PARK DRAINAGE IMPROVEMENTS PHASE 1 PLANS FOR ADDITIONAL STORM UTILITY INFORMATION.
  2. CONTRACTOR TO VERIFY EXISTING LATERAL LOCATIONS.



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P.E. No. 59218, FL

1401 E. Broward Blvd., St. 302  
Fort Lauderdale, FL 33301  
Engineering Business No. 2429

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



MARK	DATE	DESCRIPTION	BY
	2/17/12	REVISIONS PER DOH & COH UTILITIES COMMENTS	AM/FKC
	7/27/12	REVISIONS COH BUILDING DEPT. COMMENTS	AM/FKC

CITY OF HOLLYWOOD

WATER MAIN REPLACEMENT PEMBROKE RD TO HOLLYWOOD BLVD  
FROM N. 52 ND AND N. 56 TH AVE TO S.R. 441 AND WASHINGTON  
PARK/LAWN ACRES SEPTIC TO SEWER CONVERSION

SANITARY SEWER PLAN  
AND PROFILE 58TH AVE

Project No.: 200-16428-17001  
200-16428-18001

Designed By: JMA

Drawn By: TM, AE

Checked By: KC, JMA

C-232

Sheet

Bar Measures 1 inch

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# **APPENDIX F**

# **METER LISTING**





## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000118206	45950772	68506	1	ANTONIO VILARINO	954-981-6777	1321 N STATE ROAD 7	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.02247	-80.207452
000121394	2488080	73253	1	HAROLD SQUARE COMPANY	404-312-2876	5651 WASHINGTON ST	HOLLYWOOD FL 33020	2	Sensus/Invensys	W-TURBO TURB	SENSUS,ICE,2,WTURBO,6DIGIT,10CuFt		
000121394	2488080	73252	1	HAROLD SQUARE COMPANY	404-312-2876	5651 WASHINGTON ST	HOLLYWOOD FL 33020	1	Sensus/Invensys	W-TURBO TURB	SENSUS,ICE,6,WTURBO,6DIGIT,100CuFt		
000129084	63539827	87060	1	DISC AUTO PARTS # 572	866-322-4547	1511 S STATE ROAD 7 1	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.996842	-80.206923
000129090	6072374	60433	1	1 & S TIRE AND AUTO CENTER INC	954-987-7489	5911 PEMBROKE RD	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995295	-80.205423
000129652	2254496	21743	1	1001 SR7 LLC	954-536-7120	1001 S STATE ROAD 7	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001655	-80.206703
000129658	40070663	21747	1	CAPITAL GROUP OF BROWARD INC	954-445-1535	1027 S STATE ROAD 7	HOLLYWOOD FL 33023	1	BADGER	M-70 PD	Badger ADE M70 1 Encoder 6D 1 Cu. Ft.	26.000777	-80.207075
000129670	41169434	63470	1	KOLO 1 LLC	305-467-0070	5900 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001502	-80.205478
000129678	2280912	22351	1	THOMAS MARY E	954-983-1409	5201 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996827	-80.195463
000129680	2280927	22350	1	GATOR PROPERTY VENTURES LLC	786-222-7805	5203 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996825	-80.195462
000129682	2280785	22349	1	MCFIELD NANCY S	999-999-9999	5215 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996823	-80.195617
000129686	6070285	59484	1	LYONS WILLIE JOE		5225 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996838	-80.196017
000129688	45991196	69218	1	RILEY HAZEL COOPER		5229 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996812	-80.19617
000129690	2255335	22343	1	GIDRON VERONICA L	954-894-7330	5235 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996795	-80.196205
000129692	2256616	45704	1	MOORE THERESA B	954-966-4736	5241 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996813	-80.196512
000129694	2281182	22338	1	HINES ULYSSES	954-626-6400	5301 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996815	-80.196493
000129696	2734487	61884	1	CARSWELL SONNY	954-515-7800	5291 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996802	-80.19681
000129698	21232674	74609	1	MAKING MIRACLES HAPPEN LLC	954-829-9467	5361 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996767	-80.19682
000129700	21961095	82524	1	CHARLES ROSE	786-448-6451	5413 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996781	-80.197114
000129702	46268618	75313	1	SWAY CHARLES-1 BORROWER LLC	435-750-5450	5419 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996813	-80.197245
000129704	46020798	70561	1	PETERSON KENDRICK JACQUELYN	954-981-3413	5423 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996785	-80.197257
000129706	2280923	22326	1	WILLIAMS TOCCARA & JAMES	999-999-9999	5425 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996778	-80.197582
000129708	46091894	72076	1	KNOX WILLIAM	754-423-1770	5441 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99703	-80.197623
000129710	46268604	75139	1	ERNEST E JONES EST	754-423-6239	5445 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996773	-80.197884
000129712	2280917	45699	1	ALEXIS MARIE E	305-282-0395	5501 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99678	-80.19791
000129714	2256624	22318	1	RODRIGUEZ BERTHA	305-467-7206	5571 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99679	-80.198192
000129720	21080392	72683	1	HANNA MARY	954-981-3138	5545 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996775	-80.19864
000129722	2256609	22310	1	PIERRE FRISNER	786-541-5801	5555 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996797	-80.198673
000129724	40045927	65428	1	GOLD HAREN CONSTRUCTION CO	954-347-0602	5200 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996687	-80.195812
000129726	41028090	45697	1	MCCLAREN ADRIAN	305-467-1328	5206 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.9967	-80.195563
000129728	63539830	87069	1	BARNETT GLORIA	786-564-7749	5212 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996685	-80.195608
000129732	63540446	88083	1	CHERICLAIR MARIE	954-967-9717	5224 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996697	-80.195897
000129734	2279942	22342	1	HARVEY ELIZA	954-839-5081	5230 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996675	-80.19618
000129736	46019240	70613	1	BAPTISTE COLLINS	305-527-7486	5234 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996685	-80.196193
000129740	6063764	57093	1	TILLMAN ROSCO	954-967-4742	5308 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996709	-80.196597
000129740	24321742	82401	1	TILLMAN ROSCO	954-967-4742	5308 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.996709	-80.196597
000129742	41203919	65397	1	BOWENS WILLIE F	305-904-2202	5324 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99665	-80.196657
000129746	21220532	73246	1	ROLLE SOPHIA	0-989-9824	5416 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996706	-80.19709
000129748	63601612	87593	1	DIXON JOHN	754-234-5064	5418 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99667	-80.197112
000129750	21232735	75038	1	HAYWOOD CLEOLA	754-234-5064	5420 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99666	-80.197317
000129752	2280925	22324	1	MARENCO HOLLMAN	786-623-9385	5426 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996657	-80.197548
000129754	2280771	42972	1	MILLS WILLIE LEE	954-985-8810	5430 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996662	-80.197553
000129756	2280777	22322	1	MELVIN JANIE	954-967-6615	5440 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99664	-80.197785
000129758	2807486	67012	1	PHILLIPS LEA & ALEXANDER	785-547-1481	5450 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996632	-80.197957
000129760	2256413	49228	1	SHARP PROPERTIES OF SOUTH FLA	954-608-8480	5454 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996634	-80.198168
000129762	40078489	50033	1	SHELLY ANN HAMILTON & CULLEN A SIRGOOL	786-306-2628	5460 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996629	-80.198209
000129764	46269318	75198	1	LOUIS EDMOND	305-244-2824	5530 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996637	-80.1985
000129766	2256618	22313	1	BLATCH MARSHA	954-966-7616	5540 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996627	-80.198493
000129770	63539775	87865	1	MURRAY ETORIO	954-274-0274	5551 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995966	-80.198632
000129772	41144379	66023	1	REYNOLDS EDGAR	954-296-7650	5541 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996062	-80.201032
000129774	21035644	67436	1	JEAN-PIERRE DARIO & MARLENE	786-259-3654	5539 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996063	-80.198397
000129776	45991173	69608	1	BROWN LYNDON	646-675-2216	5521 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996035	-80.198145
000129778	63540538	87070	1	LAING KENESHA	786-382-4332	5451 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996055	-80.198008
000129784	45954221	68049	1	HOLMES EDWARD	954-986-0160	5441 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996053	-80.197569
000129786	6048153	56672	1	CLARK BARBARA	954-966-3165	5431 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996043	-80.197544
000129788	6048139	50726	1	BURNETT CONNIE F	786-278-0703	5421 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996028	-80.197292
000129794	63602043	88302	1	BOOKER ANTON & THEOFIN	954-652-8189	5351 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99607	-80.196938
000129796	63539993	86511	1	ALVAREZ-BRANCH ELIZABETH	305-764-5662	5349 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996052	-80.196658
000129798	40082251	41799	1	COOPER WINIFRED	954-961-1853	5235 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996077	-80.19642
000129800	45991314	70260	1	RAMIREZ FELIPE & CHIONG TAMARA	954-684-2026	5233 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996102	-80.196175
000129804	6061666	55985	1	NIXON YOLANDA	305-213-8796	5212 FLETCHER ST APT 1	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996082	-80.195897
000129810	21232776	74484	1	PENUELA HECTOR	754-610-9369	5207 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99609	-80.195567
000129818	40078426	47629	1	HARRIS SHERMAN	954-756-4870	5248 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995981	-80.195573
000129824	41197909	63775	1	SAINTELUS JEAN KELLY	786-683-7077	5218 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995946	-80.195866
000129826	6056735	55183	1	RICO GILBERTO R	954-937-7426	5220 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995926	-80.195872
000129828	6061660	55986	1	JEFFREY-GRIER YVETTE	954-919-8738	5222 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995932	-80.196175
000129830	21265392	78337	1	REINOSO ELOISA	786-399-1250	5224 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995928	-80.19639
000129834	21449909	80477	1	HALLMAN SHIRLEY	954-987-2791	5234 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	2	

## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000129840	40082249	47623	1	WHITEHEAD ENOCH	954-987-9289	5360 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995918	-80.196946
000129842	21415869	80256	1	WHITFIELD ANTHONY & DEBORRAH	954-458-6916	5410 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99591	-80.197246
000129846	40070716	41778	1	WILCHER BOBBIE	954-258-1341	5418 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995927	-80.197583
000129850	2734485	61866	1	SMITH ROBERT	954 722 7001	5420 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995903	-80.197588
000129854	46268878	77845	1	MOORE HARRY	954 722 7001	5450 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995879	-80.197842
000129856	40082247	47618	1	KELLY J	954-871-4456	5454 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995879	-80.197993
000129858	40069966	47617	1	GOODMAN WILLIE	954-681-1416	5460 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995886	-80.19831
000129860	40082263	41772	1	WILSON ANGELA	954-964-3560	5438 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995892	-80.198535
000129862	40069980	41771	1	RAMIREZ JOHN J.	305-741-8271	5540 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995912	-80.198637
000129864	40082259	47616	1	FOREMAN HANCHIE	954-558-1948	5550 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995861	-80.198632
000129866	63539961	86506	1	SALEM MUSLEH SAMIHA	832-564-9739	5595 PEMBROKE RD	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995323	-80.198453
000129882	41232371	80924	1	MATHIS EMMER	786-226-5587	5505 PEMBROKE RD	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.994915	-80.197232
000129910	40078632	47380	1	PEMBROKE AMZ LLC	917-482-7079	5337 PEMBROKE RD	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995366	-80.196714
000129918	21046699	67738	1	LNZ HOLDINGS LLC	954-249-7404	5615 PEMBROKE RD	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.995355	-80.196234
000129938	40081909	47612	1	DURENY ADELROSE	786-419-7104	5600 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995852	-80.199123
000129940	40082258	41764	1	O'NEIL AUDREY	954-579-8153	5604 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99589	-80.199292
000129944	6056738	55187	1	FETLAR LLC		5612 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995892	-80.199533
000129946	6048144	50715	1	HALL MARY R	954-822-5751	5616 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99526	-80.199631
000129958	40081962	41884	1	PARRISH DWAYNE	954-895-2044	5601 PEMBROKE RD	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995483	-80.198932
000129960	40070715	47614	1	BILLINGS LARRY	954-684-4808	5600 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996282	-80.198982
000129962	40070718	60979	1	ALLEN VERONICA & ERICA	954-210-3440	5604 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996743	-80.196695
000129964	40070705	41816	1	FAUSTIN SOUVENANCE	954-200-1957	5608 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99659	-80.199317
000129968	40070708	47643	1	WILSON FREDDIE LEE	954-983-0341	5620 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996614	-80.199625
000129974	40081919	41759	1	JARRETT DWIGHT	954-268-6554	5613 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996022	-80.199597
000129976	45993599	70272	1	FOX WILLIE	305-953-2266	5609 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995989	-80.199577
000129978	2734634	62052	1	TISDALE HARRY	305-953-2266	5611 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996024	-80.199279
000129980	63539988	86510	1	PINKNEY JR LAWRENCE L	305-953-2266	5607 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996045	-80.199288
000129984	21220175	73834	1	HSBC BANK USA NA TRSTEE	866-952-6514	5601 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997403	-80.178062
000129986	41232330	72445	1	HUDSON MARTHA	954-964-4286	5603 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996746	-80.199182
000129988	40069976	57811	1	BYFIELD CHRISTOPHER	954-404-4977	5609 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99677	-80.199448
000129990	40070711	41817	1	ARISTIZABAL JAIME	786-303-7942	5625 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996733	-80.199467
000129992	40069968	41821	1	LALL DHANWANTIE	754-423-2900	5639 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996688	-80.19967
000130002	40081921	47606	1	EMMER RYAN	954-663-4973	5670 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995888	-80.200462
000130004	40082056	47605	1	NATIONWIDE HOLINESS CHURCH	954-540-8859	5680 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995875	-80.200663
000130012	40060092	47546	1	HOUSE OF THE LIVING GOD	786-436-0588	5637 PEMBROKE RD	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.995325	-80.200497
000130026	46360973	78179	1	BULLARD SIMALENE	305-620-5733	5619 PEMBROKE RD	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995325	-80.199982
000130030	23002663	83597	1	HMH HOLDINGS LLC	954-393-4024	5650 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996619	-80.200123
000130034	40070707	47646	1	ANDERSON JONATHAN	754-423-8480	5610 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996633	-80.200464
000130036	40082047	41852	1	HARRIOTT TREVOR	484-903-1397	5680 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996633	-80.200705
000130038	40070399	41853	1	NEW HAVEN ASSOCIATES INC.	786-252-3354	1601 S 57 AVE	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996663	-80.200765
000130044	40081920	41753	1	SWAY 2014-1 BORROWER LLC	435-753-9875	5673 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996047	-80.200557
000130048	40081922	47607	1	MAXI MARIE F	786-413-2447	5655 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996027	-80.200166
000130052	21449956	80425	1	21ST STREET ENTERPRISES INC	954-274-1234	5666 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99738	-80.20068
000130054	46269282	76373	1	FRASER COLLIN & STEPHANIE	786-447-3822	5662 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997388	-80.20065
000130056	2256220	22638	1	COOPER MARY & RALPH	954-735-7318	5658 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997377	-80.200308
000130058	2281087	45787	1	GALVIS JORDAN	954-982-4277	5654 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997388	-80.200312
000130060	21232600	74454	1	THORNTON NELLIE	954-963-6943	5650 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997357	-80.200078
000130062	2278845	47648	1	SUNSHINE INVESTMENTS 1777 LLC	754-214-1546	5685 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-70 PD	Badger ADE M70 1 Encoder 6D 1 Cu. Ft.	25.996784	-80.200687
000130064	41169512	63438	1	DILWORTH ARTHUR	954-683-8952	5663 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996642	-80.200475
000130068	46268694	75233	1	JAMES PHILOMENE	954-662-9712	5655 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996786	-80.200236
000130072	45993990	71144	1	CITY OF HOLLYWOOD		5640 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998172	-80.200657
000130076	21047067	67536	1	STRACHAN DIANE & RICARDO	954-548-7230	5632 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998098	-80.200472
000130086	2749144	66036	1	JONES WILLIS	3056659826 3	5667 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997238	-80.200705
000130088	21080416	73053	1	CASTILLO ANA	954-842-5226	5663 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997503	-80.200535
000130090	23003697	83754	1	YORK ARTIE	954-893-7846	5659 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99753	-80.20042
000130092	46091910	73052	1	CHANDLER EVELYN	954-483-6907	5655 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997524	-80.200239
000130094	46268560	75672	1	SMITH SHANTELLE M	954-214-3507	5651 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997522	-80.20003
000130108	46269113	77183	1	BENNETT EARNESTINE M	954-662-7241	5635 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.9984	-80.200458
000130116	2281122	33038	1	THOMPSON INVESTMENT MANAGEMENT LLC		1501 S STATE ROAD 7 WEST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99752	-80.206703
000130118	46091595	79846	1	MAX FIX INC	786-246-4393	5932 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997437	-80.206508
000130124	2281172	32729	1	HENIE PRODUCTION INC	786-860-4720	5920 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997468	-80.205985
000130126	63053519	86366	1	ELEA HOLDINGS LLC	954-295-9467	5912 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-70 PD	Badger ADE M70 1 Encoder 6D 1 Cu. Ft.	25.99747	-80.205378
000130130	2281108	32733	1	DECA HOMES LLC	305-776-5657	5850 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997527	-80.205063
000130134	2734486	61885	1	FRZ CAPITAL GROUP LLC	954-391-1758	5836 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997467	-80.20461
000130136	21220246	73447	1	MOBLEY JOHN	954-983-1941	5838 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997455	-80.20463
000130138	46268787	77666	1	FRATIER ESAY	954-985-0550	5834 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997468	-80.204373
000130140	46485263	79640	1	5830 MAYO STREET LLC	754-245-4506	5830 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997443	-80.204047
000130142	2254767	22677	1	DOYLE VALEITHA E	954-205-6548	5820 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997458	-80.204013

## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000130148	23002740	84020	1	HARVEST TIME CHURCH OF JESUS CHRIST	954-966-8444	5808 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit		
000130148	46406447	81267	1	HARVEST TIME CHURCH OF JESUS CHRIST	954-966-8444	5808 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit		
000130158	21080796	72746	1	VOYAGER LENDING	954-557-3446	5808 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.997593	-80.206145
000130164	2281117	80800	1	JEFFERSON EDDIE & JESSIE	954-394-3606	5915 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997635	-80.205532
000130176	2254789	32739	1	WRIGHT WILLIE J	754-244-2634	5843 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997632	-80.204787
000130178	46091715	72209	1	PEREZ SHERLYNE H.	305-834-8730	5833 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997632	-80.204483
000130180	21232734	75037	1	RODRIGUEZ LUCY	954-442-8962	5829 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997602	-80.204408
000130182	45940442	71065	1	NOEL YOLENE	954-381-9931	5825 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997582	-80.204073
000130186	23001444	84533	1	MAMMON JEFF	786-356-7909	5821 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997243	-80.177845
000130190	63601613	87592	1	RUIZ DAVE C.	754-281-1944	5809 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997605	-80.20354
000130192	2254753	22672	1	MONTAK DEBRA & BENJAMIN	305-384-5239	5801 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997705	-80.203105
000130194	2734647	62625	1	TAYLOR MAIZALIN DUNCAN	754-423-6758	5814 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99817	-80.203593
000130196	40067797	43039	1	SERGIO NICARAGUA EST	305-776-0953	5818 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998158	-80.203725
000130198	24259119	82231	1	MILLS PEARL M	305-532-2922	5830 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998197	-80.20417
000130202	46268532	76374	1	JACKSON GLORIA	786-227-3754	5834 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998177	-80.204493
000130204	40078316	45809	1	ABRAHAM ALEX & SHOBA	954-258-1551	5836 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998185	-80.204782
000130206	23001352	84236	1	PENDERGRASS DAN	954-966-3383	5844 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998202	-80.204913
000130210	41203986	66039	1	GARCIA S.P.RIOS & PABLO	954-961-6604	5902 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998202	-80.205108
000130212	41232436	68891	1	DEAN FREDERICK & CARMEN	954-966-3895	5908 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998178	-80.205397
000130214	45991301	70259	1	FLURIMA PATRICK & KAREN	954-963-3298	5910 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998175	-80.205422
000130218	2279113	33026	1	ALEXANDER KEITH	954-437-6135	5918 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 3/4 ProRead 6 Digit	25.998163	-80.205678
000130220	2279158	33199	1	MSK ENTERPRISES LLC		5920 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998167	-80.206005
000130222	46091901	73051	1	TLC-233 LLC	954-253-1884	5926 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998167	-80.206005
000130224	46408852	82001	1	SCHMITZ SHERRI L	954-802-7423	5928 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998193	-80.206172
000130226	2279108	79256	1	SCHMITZ SHERRI	954-802-7423	5934 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998008	-80.20645
000130242	2099589	33420	1	BLANCHARD FRANCOIS & MARIE	786-586-7166	5913 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998307	-80.2057
000130244	2099578	33421	1	KLASS JOEL V	954-562-4111	5909 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998313	-80.20541
000130248	41197092	64889	1	FERNANDEZ GREGORY	954-961-4729	5849 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99849	-80.205345
000130250	46091513	73050	1	RIVERA-MONTALVO JO-AN	787-300-1282	5845 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998318	-80.20492
000130254	46022684	72022	1	HERRERA DARLING	407-202-4763	5835 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998337	-80.204387
000130258	6054544	56740	1	5825 WILEY STREET LLC		5825 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998278	-80.20414
000130262	40067787	43041	1	ANDRES DOMINGO JOSE	954-982-4527	5813 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99833	-80.203585
000130264	40067799	77752	1	FOSTER MARCIA A.	786-532-0694	5809 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000130266	40067803	45813	1	LAING TAYLOR PAULETTE	954-842-9829	5807 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998302	-80.203278
000130268	21080415	72976	1	CL MANAGEMENT ASSOCIATES LLC	954-549-3146	5801 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99832	-80.203252
000130270	21047121	67845	1	WOLMAN ISRAEL	305-331-6853	5800 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998859	-80.203172
000130274	2178842	21435	1	WILLIAMS INANDA	954-394-7191	5810 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99887	-80.20344
000130280	45991085	69215	1	WOLMAN ISRAEL	305-331-6853	5816 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99888	-80.203738
000130282	2178838	50852	1	ZAR 18 LLC	347-623-5710	5818 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998895	-80.204054
000130288	40063826	21444	1	SHAW JR JAMES	954-962-4728	5828 PLUNKETT ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998893	-80.204388
000130290	2279024	21445	1	BROOKS IAN	786-487-8491	5832 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998893	-80.204622
000130294	21225371	77849	1	PURAN ESHWERDATT	786-236-0214	5844 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000130304	2254346	21933	1	SAM'S COMMERCIAL DEV	954-864-5050	5920 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998902	-80.205567
000130322	2734739	62409	1	WOLMAN ISRAEL	305-331-6853	5927 PLUNKETT ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999057	-80.206422
000130336	21225313	73860	1	ARIAS MARIA T.	954-993-5020	5901 PLUNKETT ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999198	-80.205652
000130346	2278660	50851	1	ALLIANCE MONUMENT	954-966-9415	5825 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998978	-80.204138
000130348	46268580	75314	1	ALLIANCE MONUMENT COMPANY	954-966-9415	5827 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998978	-80.204068
000130360	46269034	77976	1	AE HOLLYWOOD LLC	707-932-5887	5790 RODMAN ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999597	-80.20287
000130364	2734432	62579	1	GRUNDLER HELLENE	954-341-8591	5745 PLUNKETT ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999012	-80.202215
000130366	46022675	70754	1	MIRROR MASTERS	954-966-8035	5713 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999035	-80.202228
000130374	41197350	64722	1	RIEMER BROTHERS LLC	954-454-3145	5651 PLUNKETT ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997583	-80.178002
000130376	63783131	88181	1	ADVANCE GLOBAL METALS	786-877-4084	5631 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000130378	2279788	22175	1	RIEMER BROTHERS LLC	954-454-3145	5650 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999542	-80.200242
000130390	2255340	22146	1	CHIRONNO JOHN R	954-987-9920	5601 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999022	-80.199447
000130392	2046770	22176	1	HOLLYWOOD MOTORSPORTS	954-964-3488	1210 S 56 AVE	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.999603	-80.19944
000130394	24321410	82420	1	CWV CABLE WIRING INC	954-893-0501	5610 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999574	-80.199554
000130396	2807284	66697	1	PLUNKETT COMMERCIAL INV. INC	954-981-9018	5620 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999981	-80.199732
000130408	40080397	43137	1	WILLIAMS NORMA J		5670 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999605	-80.201902
000130410	2807536	66755	1	QUENTIN GOMEZ MANAGEMENT INC	954-530-8314	5738 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999561	-80.202408
000130418	2281376	22161	1	WOLMAN ISRAEL	305-331-6853	5753 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999735	-80.202395
000130422	21961170	82917	1	GRAS FINANCIAL LLC	954-966-5571	5725 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999728	-80.201924
000130426	23001267	83997	1	RODMAN STREET HOLLYWOOD HOLDING LLC	646-208-0731	5715 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999753	-80.201777
000130428	2178162	22166	1	5TH WHEEL AUTO GROUP	954-506-5496	5709 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999533	-80.201448
000130430	2178174	50923	1	A & A INVESTMENTS	786-539-9868	5701 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999731	-80.200853
000130432	40080404	43138	1	FILPO DIOGENES S	954-588-8592	5643 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999705	-80.20085
000130440	45954119	69506	1	GOMEZ LUIS & ANA	305-621-4900	5619 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999982	-80.200288
000130442	2254875	71566	1	P TRAINA	954-661-1080	5615 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.99972	-80.199536
000130444	21449982	80348	1	PENTECOSTAL MOVMT ESMIRNA INC	954-967-9381	5601 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999713	-80.199495



## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000130446	40063951	22177	1	WALPECO INC (CHRIS)	954-983-4511	1100 S 56 AVE	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000415	-80.19941
000130450	24386527	83259	1	GOTTLIEB MARVIN	954-987-1405	5620 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000257	-80.199943
000130452	23006167	84692	1	VANTAGE HOLDINGS LLC	954-593-5323	5634 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000345	-80.20004
000130454	45954065	71671	1	TYLER ASSOC	954 240 6464	5640 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000335	-80.20074
000130460	63783019	88637	1	CHOSNIG HERBERT	352-495-3534	5708 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000130462	21220241	73470	1	ISHIMOTO RENTALS LLC	808-741-4841	5706 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000297	-80.201345
000130466	2715613	60697	1	LOMAR APTS	305-776-1087	5720 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000297	-80.201808
000130468	2254624	22200	1	MAXEAU TIMOTHY	954-642-9744	5726 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000288	-80.202075
000130470	63601609	87591	1	GRAS FINANCIAL LLC	954-966-5571	5728 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000295	-80.202243
000130478	63053375	85932	1	GRAS FINANCIAL LLC	954-967-6787	5765 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000388	-80.202963
000130480	2254359	21769	1	WOLMAN ISRAEL	305-331-6853	5759 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000482	-80.20254
000130484	63540451	88085	1	AUTO MOTO DEALS LLC	267-210-0143	5733 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000446	-80.202263
000130486	2281509	22195	1	TYLER ASSOCIATES	954-966-7600	5721 FUNSTON ST 1	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00043	-80.201843
000130490	40063955	22191	1	WOLMAN ISRAEL & SUSAN	305-934-1181	5659 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000422	-80.201307
000130494	24259439	82539	1	BROWN LESLIE G.	954-989-9113	5637 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000427	-80.200411
000130502	63540441	88084	1	COHEN MICHAEL L	954-966-3800	5613 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000447	-80.19979
000130506	46408525	82135	1	NEW BEGINNING LIFE CENTER	954-964-8815	1030 S 56 AVE	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001173	-80.199452
000130508	2281450	21710	1	PALAU GILBERT & MARIA	305-354-7334	5604 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000997	-80.19951
000130512	45993686	70866	1	DAWSON STREET LLC	718-314-7525	5610 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00099	-80.199725
000130516	2278665	69337	1	FLORIAN'S WOODWORKING	954-985-7331	5620 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00091	-80.199827
000130522	2278662	21714	1	TYLER POLK TRUST	954-966-7900	5636 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001022	-80.200498
000130524	2281366	21716	1	MOORE CHARLIE	954-962-8708	5648 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000988	-80.201043
000130534	40070648	21727	1	MILAND TECHNICAL SERVICES INC	954-478-3986	5718 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001028	-80.20175
000130540	2281324	76926	1	FUNSTON DISTRIBUTION INC	954-985-4326	5730 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000917	-80.202087
000130544	40070654	21728	1	HAUSER GLENN R	954-966-7551	5756 DAWSON ST	HOLLYWOOD FL 33020	1	Sensus/Invensys	SRII PD	SENSUS,SRII,5/8x3/4,ECR6DIGIT,1 CU.FT.	0	0
000130550	40071050	21725	1	ZULLA ALFONSO	954-929-5077	5741 DAWSON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.00119	-80.202915
000130556	2734682	74504	1	MIKE HUNTER INC		5715 DAWSON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001117	-80.202038
000130564	2255082	21715	1	TYLER ASSOC		5643 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	26.001128	-80.20075
000130570	2278666	21713	1	BRUNO WILFREDO	917-345-1077	5617 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001137	-80.200165
000130574	21265770	79303	1	ZAPATA JUAN D.	954-648-3021	5615 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001153	-80.199573
000130582	23001272	84025	1	SIGNATURE INVESTMENT 1 LLC	954 544 5555	5612 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001858	-80.199465
000130586	45991192	69609	1	QUENTIN GOMEZ	954-983-8811	5622 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001702	-80.20015
000130588	2046189	21729	1	QUENTIN GOMEZ MANAGEMENT INC	954-530-8314	5626 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	26.001752	-80.20065
000130592	2046227	21782	1	W B TOOL INC		5640 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	26.001763	-80.20111
000130594	40050642	21784	1	GOTTLIEB DBA LOMAR APTS		5700 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001747	-80.20151
000130596	46268568	75197	1	HAMS 18 LLC	954-448-9413	5710 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001762	-80.20186
000130602	45993796	70398	1	BEST AUTO DEAL N DRIVE LLC	954-743-1968	5740 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.00174	-80.202678
000130606	46091907	73019	1	MISHELE SHMUEL & ZAHAVA	954-864-5050	911 S 58 AVE	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001924	-80.202945
000130608	2255226	21793	1	5824 DEWEY LLC	954-394-3945	5741 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001867	-80.20272
000130616	46091463	73069	1	JOHNSTON EARL	954-989-7794	5721 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001892	-80.201803
000130624	2254631	21783	1	HAWKINS INC	612-331-6910	5705 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001895	-80.20141
000130636	46268619	82878	1	IZQUIERDO DEVELOPMENTS CORP	305-586-9366	5600 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002483	-80.19922
000130638	40067263	21835	1	ROYAL KIDS OF HOLLYWOOD LEARNING CENTER	786-290-0609	5610 WASHINGTON ST	HOLLYWOOD FL 33020	1	BADGER	M-70 PD	Badger ADE M70 1 Encoder 6D 1 Cu. Ft.	26.002533	-80.19987
000130640	2279441	79266	1	CITY SHOPPING CENTERS LLC	954 989 3200	5660 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002513	-80.200126
000130644	21220550	74505	1	FEDELIMS CARPETS	954 989 3200	5690 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002532	-80.200773
000130646	2256275	21826	1	VITERI BLANCA N	954-895-2722	5700 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002748	-80.204422
000130652	2256227	79264	1	SCRIVANI ALBERT	CELL 954 987	5718 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002503	-80.201748
000130656	40049264	21822	1	UGWU CLAUDIA	954-830-6660	5726 WASHINGTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.002567	-80.20217
000130662	40082252	47394	1	HANNA STEVEN L.	954-394-5752	5744 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99592	-80.202712
000130666	40081915	47552	1	PARCHMENT SIMONE		5740 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995956	-80.202394
000130674	40081916	41741	1	BORNEUS MARIE ANGE D	305-899-2017	5750 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996057	-80.201795
000130676	45954085	68186	1	DAWKINS RON	954-981-3091	5748 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99596	-80.201793
000130678	45991214	69411	1	LLANES YUNIER	786-223-1822	5712 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995893	-80.201495
000130680	45939183	68590	1	CULPEPPER DOROTHY L		5710 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995921	-80.201347
000130684	24386685	81735	1	GRAHAM WILLIE	954-987-9427	1650 S 57 AVE	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995968	-80.201065
000130706	40078406	47385	1	HARVEY ENID	954-961-5744	5735 PEMBROKE RD	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995358	-80.202234
000130708	21225490	73542	1	RAY L VARGAS & PAUL	954-512-8588	5749 PEMBROKE RD	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995362	-80.202778
000130714	21045434	67876	1	MORNING MALEKA	754-802-0143	5736 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996627	-80.202506
000130716	21232540	74485	1	PARISH LUEVENIA	954-961-7408	5734 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996652	-80.202308
000130720	6061744	56675	1	WHIPPLE ANNIE EST	305-910-4436	5728 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996649	-80.202113
000130724	40078627	68850	1	OLIVER JR CALVIN C	954-648-2935	5720 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996692	-80.201808
000130726	40078625	41830	1	MC KINNEY R	954-961-5763	5712 FLAGLER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996718	-80.201685
000130736	40081905	41746	1	RHODES MARIA	754-204-6420	5703 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996058	-80.201417
000130738	2281064	47392	1	HENRY LAVERNE & WITCLIFFE		5705 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996045	-80.20148
000130740	40082257	41745	1	J-BAPTISTE CATHERINE& HERWIN	786-853-4661	5715 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996042	-80.201483
000130744	40082061	41739	1	NAHUEL PROPERTIES CORPORATION	954-701-5858	5727 FLETCHER ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996072	-80.202035
000130746	63539966	86508	1	BEASON NORRENE	754-244-1312	5729 FLETCHER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996007	-80.202217
000130756	2254759	22670	1	LATIMER OTIS	305-624-9590	5760 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997372	-80.202795



## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000130760	46268933	77574	1	BHM 5740 LLC	786-281-6655	5740 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997432	-80.202575
000130766	2255863	22659	1	CARTER KIMBERLY	954-864-0863	5716 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997398	-80.20183
000130768	45974566	68974	1	BLACK DEBBIE	954-467-2355	5714 MAYO ST	HOLLYWOOD FL 33020	1	Sensus/Invensys	SR11 PD	Invensys SR11 5/8x3/4 ICE 6 Digit 1 Cu.Ft.	25.997397	-80.201545
000130774	2256515	83441	1	FERGUSON RUBY	786-355-6011	5700 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10 E-Coder	Neptune Mach10 E-Coder 5/8-1in 6D 1CuFt		
000130784	6048133	64361	1	BUTLER CHARLES	786-499-7901	5737 FLAGLER ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.996805	-80.20245
000130792	40069922	43048	1	PATINO-MARTINEZ WILLIAM	305-748-3133	5736 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998132	-80.202627
000130794	41195704	64639	1	PETERSON KENNOVIA	954-699-7447	5728 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998155	-80.202327
000130798	21225332	81800	1	5720 WILEY ST SH27 LLC	954-633-1619	5720 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999157	-80.200453
000130804	21232738	74497	1	BEMBRY JOHN	954-286-2579	5708 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998117	-80.201407
000130806	2255173	22157	1	MAULSTBY DWAYNE A.	954-963-4673	5737 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997572	-80.177978
000130808	46091518	73054	1	HAMPTON CORNELL D.	954-687-5766	5701 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997532	-80.201175
000130810	21080419	73055	1	SHEFFIELD CALETHA	954-966-1535	5711 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99752	-80.201238
000130812	2255366	22655	1	SMITH ALTON	954-889-4235	5715 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997522	-80.20155
000130820	46269618	77389	1	CERBERUS SFR HOLDINGS L P	770-726-0204	5725 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997547	-80.202045
000130824	2807592	66800	1	BATTON LENORA S	954-963-4673	5737 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997525	-80.202443
000130826	2255864	22664	1	MERCIER EDNER & PHILLISE	786-290-0590	5739 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997563	-80.202427
000130828	63539828	87066	1	DICKENS ROSEZENA	954-965-8857	5741 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997547	-80.202753
000130830	63783188	88180	1	EL BATNIGI JOANN	954-701-5750	5745 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000130838	40063829	79258	1	INTERCHEM LLC		5720 PLUNKETT ST FRNTL	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998845	-80.202035
000130840	2281292	50863	1	GOMEZ JHENSEE	978-420-6598	5720 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998836	-80.202096
000130846	6048260	50864	1	PURAN HETRAM	954-981-9018	5730 PLUNKETT ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998833	-80.201605
000130848	21045230	67523	1	FUENTES CRISTIAN M	954-394-7871	5708 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99886	-80.201516
000130852	41169670	63269	1	MURRAY MAMIE R	954-962-4058	5701 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99825	-80.201282
000130854	6076498	61073	1	STEWART BOBBY J.	954-962-5435	5705 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998287	-80.201263
000130856	40078332	43058	1	MORNING DELORISE	954-985-0136	5721 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99827	-80.201547
000130860	40078343	43056	1	GIL RIJO EZEQUIEL	786-302-5381	5729 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998283	-80.201737
000130862	40078334	43055	1	AVILES MARIA		5733 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998283	-80.20189
000130868	24321709	81939	1	ARCE MARILYN	954-303-1675	5739 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998272	-80.202195
000130872	21220015	73620	1	CEDANT GERALD & VALERIE	786-525-4617	5745 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998307	-80.202722
000130874	40067793	43045	1	MONDESTIN KATIA	786-537-1950	5747 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998297	-80.202797
000130876	45974533	69496	1	GUST CHRISTINE	305-935-0722	1300 S 56 AVE	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998618	-80.19909
000130898	45993948	70496	1	JOHNSON ROSA L	954-961-2909	5600 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998107	-80.199175
000130900	6076477	60933	1	DENIS SHERMAN H	954-687-6404	5604 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.9981	-80.199367
000130914	2280761	22629	1	HARRIS BRENDA	954-394-0937	5615 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997507	-80.199612
000130916	23001462	84456	1	GREAT HOUZE HUNTER LLC	786-547-5599	5605 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997527	-80.199347
000130918	21449997	80615	1	PHIL JEREMY	786-382-8552	5603 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997477	-80.199188
000130920	2256605	42981	1	BARTON EARLYN	954-961-7734	5601 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997515	-80.199175
000130922	2256602	77801	1	NOAILLES PERALD	754-244-4190	5600 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99738	-80.199187
000130926	2280764	22627	1	WILLIAMS CAROL	954-642-6693	5610 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997372	-80.1995
000130928	2280770	22628	1	AUGUSTIN NATACHA	786-416-3996	5626 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99736	-80.199505
000130930	2280756	22634	1	SHERRELL EUGENE	954-963-3138	5636 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997363	-80.199823
000130932	21232788	74637	1	FYR SFR BORROWER LLC	844-824-0007	5646 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997373	-80.199831
000130934	46268638	76069	1	MELVIN BOBBIE	954-962-4018	5200 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997435	-80.195583
000130936	21045229	68831	1	KING EDDIE	954-989-9579	5206 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997603	-80.195833
000130938	2280775	73888	1	RODRIGUEZ ALBERTO	754-264-8797	5210 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99744	-80.195878
000130942	41144326	63066	1	FIRST CHURCH OF CHRIST	954-925-4375	5216 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99743	-80.195967
000130944	2280922	22361	1	FLORENCE TAMMI	954-709-4901	5218 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99743	-80.19625
000130946	2256775	22365	1	DAVIS JOSEPHINE	954-989-3269	5424 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.9976	-80.178005
000130952	21220263	73245	1	DICKERSON CHENELL	754-244-0296	5436 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997583	-80.17798
000130954	46269611	77391	1	DIXON EZRA	305-628-7869	5440 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997598	-80.177988
000130958	2280747	22375	1	MC CREA JACOB	954-987-5283	5456 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997573	-80.177992
000130964	6054216	84427	1	JOSEPH TIFFANI L	954-662-9027	5516 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000130966	2255125	22609	1	NOEL CITA	954-966-2629	5520 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997378	-80.197898
000130968	21047045	67821	1	ALLEN GLORIA JEAN	954-989-6609	5528 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.9974	-80.198147
000130970	2255124	22614	1	ROBINSON JOHNNY	754-323-4000	5536 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997458	-80.198233
000130978	40070522	79253	1	MCCREA JAMES	954-240-8682	5200 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998182	-80.195608
000130986	45951439	71163	1	GISENDANNER SATERIA	954-391-0868	5216 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998167	-80.196102
000130990	21220324	76626	1	HAMILTON KENNETH A	954-894-1922	5224 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998156	-80.196538
000130996	40067790	43071	1	OLIVER SHIRLEY	954-591-6514	5336 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99819	-80.196843
000131002	2256655	22751	1	BRINSON DONNETTA K	305-610-1109	5504 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998207	-80.19742
000131004	24321358	81859	1	SMITH TAJUANA	954-864-8394	5508 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998202	-80.197395
000131006	2807229	66268	1	BURKE CASSANDRA A	954-793-3660	5512 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998205	-80.197745
000131010	21961110	83400	1	ALEXANDER PATRICIA	954-989-1862	5520 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10 E-Coder	Neptune Mach10 E-Coder 5/8-1in 6D 1CuFt		
000131012	21270827	81807	1	SEARS JOVANNA A.	954-981-2958	5524 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000131014	6147829	76476	1	YEPES JULIE	786-262-3998	5540 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000131016	23001577	84569	1	THORNTON L J	754-214-2045	5530 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99813	-80.198487
000131020	46268823	77261	1	TERLONGE CRYSTAL RENEE	954-483-4495	5550 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99844	-80.19907
000131022	46269391	75141	1	COFER ERIC	954-993-0110	1411 S 56 AVE	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001858	-80.199465

## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000131024	6054261	52282	1	BELL JOHNNIE E	954-812-3416	5545 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99752	-80.198498
000131026	21961254	83334	1	KELLY WILLIE C	954-966-0854	5543 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997547	-80.19847
000131028	2255123	45746	1	BURGESS JOANN	954-559-9098	5537 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997548	-80.198198
000131030	2255120	22612	1	SANDS DON R.	786-955-6162	5533 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997528	-80.1982
000131032	2255126	22611	1	MOGT LLC	954-940-8730	5529 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997502	-80.198037
000131034	63539816	87067	1	CETOIT JOCELYNE	305-318-5835	5519 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997532	-80.19773
000131036	2254670	22606	1	MOORE GAIL ANN	954-989-4414	5515 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997567	-80.197737
000131042	63540547	87068	1	RINCON LEE-JEANNETTE	954-877-1305	5411 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997595	-80.177967
000131044	6067110	56000	1	MITCHELL BRANDON J	954-983-8122	5441 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997541	-80.197135
000131046	21045440	67886	1	JACKSON AHESHA	786-459-0414	5437 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997403	-80.198503
000131048	6070288	59495	1	GISSENDANNER MARY	954-243-1607	5435 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997602	-80.177967
000131052	41232075	71675	1	AUGUSTE DANISE	305-556-9900	5225 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997555	-80.196366
000131054	2256774	22363	1	EUGENE MAX CLAUDE	954-391-1042	5421 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997562	-80.196372
000131056	2280757	22362	1	SANDERS JENNIFER	305-709-7295	5241 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997562	-80.196197
000131058	2807468	66416	1	PERMENTER ARTHUR	954 547 8528	5211 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997545	-80.195894
000131062	46019622	70423	1	HARDY WILLIE JAMES	954-347-4265	5205 MAYO ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997582	-80.195588
000131064	45991189	69217	1	HARDY BILL	954-303-8916	5201 MAYO ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997519	-80.195646
000131066	46269717	77227	1	SEYMOUR CARISH S	305-879-9528	5200 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998955	-80.195633
000131068	46269155	78186	1	MARTIN TYSHAWN M	305-788-7779	5202 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998958	-80.195636
000131070	40080388	45864	1	SHAW JOYCE	954-588-1998	5210 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998955	-80.195965
000131072	6054712	52293	1	TOLSE-SHARPE AVALYN	305-962-6553	5216 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998904	-80.195981
000131084	45950559	80872	1	RAHMING KENNETH J	954-512-9142	5312 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998875	-80.196775
000131086	6054630	52294	1	WALKER MARY	754-202-7081	5400 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998854	-80.197132
000131090	41204001	65858	1	TOLIVER EARNEST C		5306 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998895	-80.197498
000131094	41169573	63344	1	FILIS WISNEL & MARIE	954-769-9163	5514 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998798	-80.197515
000131098	21080749	81667	1	JAIME AMY	305-904-3369	5522 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998868	-80.198073
000131106	40078330	45820	1	DENNIS LINTON G	305-772-6240	5599 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998257	-80.19867
000131108	41169662	63318	1	DAVIS VALERIE & HARRY	954-964-9678	5513 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998238	-80.198685
000131110	41232550	76375	1	FLEURIDOR ELSIE D	954-964-8338	5577 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998253	-80.198374
000131114	6072381	60462	1	CANNIMORE ONEIDA	754-816-0615	5533 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99825	-80.198055
000131116	40064159	81897	1	BURROWS LUTHER	954-225-3173	5517 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000131118	23001233	83675	1	CUNNINGHAM KAREN N.	954-404-7901	5513 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998232	-80.197758
000131120	6076499	61074	1	BOYD YOLANDA Y	954-203-8749	5509 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998225	-80.19778
000131122	40063930	22752	1	GAINES HYLINA	954-987-9346	5505 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998217	-80.19741
000131134	40067795	45853	1	WILLIAMS MARION	954-987-6827	5231 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998282	-80.196652
000131142	2807152	66383	1	MC CREA JAMES E	954-993-5797	5213 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998326	-80.195951
000131146	6070284	59486	1	BRYANT MARY C	305-815-4350	5205 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998342	-80.195707
000131148	6054274	52292	1	RAIFORD CLARENCE J		5201 WILEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998322	-80.195531
000132028	6076688	61357	1	SHEA EDWARD	954-983-6337	5840 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 2 ProRead 6 Digit	26.002527	-80.204546
000132030	2254636	79262	1	BUD AND MACK		5832 WASHINGTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002545	-80.20452
000132044	63539817	87309	1	SARG FINANCIAL LLC	954-967-6787	5805 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001892	-80.203453
000132046	2255222	21798	1	CONCRETE ART INC	561-212-1527	5815 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00186	-80.203777
000132050	2256793	80718	1	RUSS S AUTO SERVICE	954-983-0224	5831 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000132058	41197979	64017	1	SAAD & SABA MOTORS LLC	754-703-0282	5842 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002133	-80.205315
000132060	2255220	77799	1	KIZIAH GWYN	954 983 0234	5840 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001762	-80.204683
000132064	2255221	21800	1	SHALOM COMMUNITY CHURCH	786-247-4464	5824 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001758	-80.204362
000132066	40068091	51167	1	MKS822 LLC FLA LTD CO	305-632-8688	5822 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001735	-80.204022
000132068	2650036	67592	1	MAGIL ENTERPRISES LLC	954-709-7250	5816 DEWEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002137	-80.203723
000132070	21220374	73547	1	CASA MAYA INVESTMENTS	954-394-3945	5812 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001721	-80.203711
000132074	46360924	77346	1	HOLLY 1 LLC	954-572-5199	5801 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001135	-80.203675
000132080	21225395	74165	1	CASA MAYA INVESTMENTS	954-394-3945	5821 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000132082	46269628	83409	1	IMPORT EXPORT INTERNATIONAL	954-610-0765	5825 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10 E-Coder	Neptune Mach10 E-Coder 5/8-1in 6D 1CuFt		
000132086	46268534	76523	1	PRO CARS FINANCE AUTO SALES CORP	786-477-0294	5837 DAWSON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001233	-80.204793
000132090	40070647	21741	1	MK AUTO BROKER INC	786-586-4642	5847 DAWSON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001173	-80.205155
000132092	2254501	21742	1	CASA MAYA INVESTMENTS	954-394-3945	5854 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000857	-80.205395
000132096	2254502	21739	1	MAHLER JOEL	0-962-4262	5844 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001048	-80.205038
000132100	46268546	76336	1	CASA MAYA INVESTMENTS	954-394-3945	5834 DAWSON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001003	-80.204412
000132102	2254497	21735	1	WOLMAN ISRAEL	305-331-6853	5830 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001053	-80.204408
000132106	2254490	50995	1	BODY DAMAGE LLC		5808 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001015	-80.203818
000132108	41183979	67975	1	5733 FUNSTON CORP	954-709-7250	5806 DAWSON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001075	-80.203555
000132112	41232185	71855	1	LEVY SALVADOR J	954-336-1879	1018 S 58 AVE	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000757	-80.203165
000132114	2254301	21766	1	IGLESIA CRISTIANA JESUS	954-963-6069	5801 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000452	-80.203315
000132116	40063949	46396	1	WOLMAN ISRAEL	305-331-6853	5813 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000415	-80.203613
000132120	2254488	21765	1	WOLMAN ISREAL	305-331-6853	5817 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000465	-80.203948
000132124	2254353	21760	1	WOLMAN ISRAEL	305-331-6853	5823 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000445	-80.204515
000132126	2254291	21757	1	FUNSTON HOLDINGS LLC	786-586-4642	5835 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000457	-80.20467
000132130	40070651	21755	1	FUNSTON HOLDINGS LLC	786-586-4642	5845 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000447	-80.205187
000132134	2254366	21753	1	WOLMAN ISRAEL	305-331-6853	5901 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000437	-80.20534

## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000132144	21265368	79063	1	KOLO 1 LLC	305-467-0070	5981 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 1/2 ProRead 6 Digit	26.000755	-80.206063
000132152	21046392	68139	1	AP LAND DEVELOPMENT CORP	786 317 7492	5932 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	26.000355	-80.206357
000132164	46485120	79328	1	REGAL ASSET MANAGEMENT	954-989-9777	5832 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000353	-80.204519
000132166	6147780	76959	1	KOSHER ROOM LLC	954-842-4857	5830 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000312	-80.204277
000132172	45993945	70192	1	IT WELDING INC.	0-894-7000	5816 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000335	-80.20377
000132174	40070660	21763	1	OCHS-ELECTRIC	954-410-3713	5812 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000312	-80.203672
000132176	46268815	79305	1	MAMISH LLC		5802 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000323	-80.203574
000132178	21220154	74523	1	WOLMAN ISRAEL	305-331-6853	5800 FUNSTON ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000032	-80.203122
000132180	2281380	50919	1	SARG FINANCIAL LLC	954-967-6787	5801 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999731	-80.203311
000132186	2281118	50916	1	SHIRINIAN IRENE & VAROUJ	954 993 6641	5823 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999751	-80.204091
000132194	2734740	74043	1	MAGIL ENTERPRISES LLC	954-709-7250	5889 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999715	-80.204647
000132200	2749021	61419	1	MRS G PROPELLER INC	954-797-0067	5911 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.999792	-80.205588
000132204	40078491	50869	1	5236 PEMBROKE INC	786-347-7024	5925 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999763	-80.20623
000132228	2281187	50914	1	MADHOUSEGARAGE LLC		5836 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999595	-80.20458
000132230	46408857	81317	1	WOLMAN ISRAEL	305-331-6853	5830 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999583	-80.20426
000132240	2281379	21964	1	M & S HEAVY EQUIPMENT	954-966-0035	5802 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999713	-80.203418
000132244	40063945	21966	1	M & S HEAVY EQUIPMENT	954 963 1904	5800 RODMAN ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999337	-80.203182
000132248	41183987	65307	1	LIBERTY GAS CORP	954-983-9660	5881 PEMBROKE RD	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995298	-80.204523
000220544	46092026	72517	1	PALM GARDENS APTS	212-837-4609	5540 WASHINGTON ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 2 ProRead 6 Digit	26.001459	-80.198973
000223014	45991287	69644	1	HOLLYWOOD COMMERCE CENTER LLC	954-491-5505	1685 S STATE ROAD 7	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 1/2 ProRead 6 Digit	25.995312	-80.205619
000223022	45954052	68342	1	FEDEX FREIGHT MS#9	888-827-2247	5861 PEMBROKE RD REAR	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 1/2 ProRead 6 Digit	25.995533	-80.204503
000223024	46268800	77262	1	HARVEY ENID	954-961-5744	5737 PEMBROKE RD	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995366	-80.202254
000223028	40081953	47387	1	EMMANUEL TOUZE HEALTH INSTIT.	754-244-2199	5741 PEMBROKE RD	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995364	-80.202264
000223030	63539709	86507	1	3 STARS ENTERPRISES INC		5725 PEMBROKE RD	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995349	-80.20164
000223032	45954033	68341	1	WASHINGTON PK CHILDCARE	954-987-8747	5731 PEMBROKE RD	HOLLYWOOD FL 33023	1	BADGER	M-120 PD	Badger ADE M120 1 1/2 Encoder 6D 10 Cu. Ft.	25.995377	-80.201877
000223034	40081956	41889	1	NATIONWIDE HOLINESS CHURCH	954-540-8859	1691 S 57 AVE	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99534	-80.200628
000223036	46485160	79661	1	TUCKER GLENDON R	954-682-7661	5621 PEMBROKE RD	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995294	-80.200159
000223040	45974306	70134	1	CHIEF CORNERSTONE OF HOPE	954-260-2637	5513 PEMBROKE RD	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000223042	40081946	47382	1	BROWN TERENCE	305-244-7860	5503 PEMBROKE RD	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995322	-80.197889
000223044	6072485	62497	1	DON PAUL LLC	754-263-3446	5401 PEMBROKE RD	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.9949	-80.196818
000223048	40081950	82458	1	PRAYER AND PRAISE TEMPLE INC	305-620-7896	5221 PEMBROKE RD	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000223050	40070229	41873	1	WHITE ANBERLEY	954-483-9635	5211 PEMBROKE RD	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995443	-80.1955
000223062	40082054	41797	1	CAMPBELL MYLES TRACY KERRIANN	334-314-7687	5231 FLETCHER ST S	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996111	-80.196113
000223064	40082063	41796	1	RICHARDSON BRENDA	786-803-5238	5231 FLETCHER ST N	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99609	-80.196095
000223066	46091523	73062	1	MCINTOSH BERTHA B	954 430 8336	5416 FLETCHER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99597	-80.197271
000223068	45954141	68343	1	BILLINGS ARTHUR	954-981-3724	5440 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995918	-80.197853
000223072	40082264	47613	1	THOMPSON ALMOND & ANN-MOORE	954-433-9300	5601 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99633	-80.199009
000223074	46406734	79468	1	MILLER DAVID	786-301-0849	5693 FLETCHER ST APT 2	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99604	-80.200662
000223076	40081912	41751	1	ALVARENGA BERTHA	786-970-8693	5693 FLETCHER ST APT 1	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995977	-80.200663
000223082	46269575	77471	1	HOOKS WILLIE M	786-256-7936	5738 FLETCHER ST	HOLLYWOOD FL 33024	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.995914	-80.202384
000223086	46269731	79838	1	PETER GEORGE & YVES	954-473-6212	5797 FLAGLER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit		
000223088	2807310	66540	1	MATYST LLC	786-303-9856	5731 FLAGLER ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996762	-80.202418
000223090	24386561	83077	1	HIBBERT SYLVIA	786-319-6295	5751 FLAGLER ST 1	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996808	-80.20213
000223092	46485058	79284	1	ANTHONY CHRISILLA	954-668-0633	5751 FLAGLER ST 2	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996802	-80.202109
000223096	6048411	81801	1	BUTLER TEMPLE CHURCH	954-963-6825	5751 FLAGLER ST 4	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.996775	-80.201663
000223100	63539880	87038	1	BROWN DEBORAH	754-204-2459	5751 FLAGLER ST 8	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996787	-80.201683
000223102	63053465	85560	1	COX MINNIE	954-964-9699	5751 FLAGLER ST 7	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99681	-80.201687
000223104	40078631	47897	1	WALKER ROY	305-834-2327	5751 FLAGLER ST 6	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.996811	-80.201664
000223106	46091526	73063	1	BUTLER TEMPLE CHURCH		5751 FLAGLER ST 5	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99683	-80.201687
000223108	40070709	47712	1	MACK DORIS	954-962-9064	5708 FLAGLER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996666	-80.201362
000223110	24321743	82399	1	WALDEN JIMI L	754-367-1215	5659 FLAGLER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996768	-80.200248
000223114	46269664	78012	1	CUNNINGHAM GWENDOLYN	305-336-7645	5505 MAYO ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997537	-80.197412
000223116	63540510	87723	1	BELLE JOYCE M.	954-934-7808	5509 MAYO ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000223118	46020118	70427	1	HOUSTON KELLY S.	954-347-1837	5500 MAYO ST	HOLLYWOOD FL 33021	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997415	-80.197107
000223120	2255121	22616	1	SIMMONS EVERLEAN	954-270-4978	5540 MAYO ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997357	-80.198495
000223122	24259470	82714	1	HIBBERT SYLVIA	786-319-6295	5600 MAYO ST APT 4	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997382	-80.19918
000223124	2256600	22624	1	HOLETT SYDIA	954-534-6023	5600 MAYO ST APT 3	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997365	-80.199173
000223126	2256606	66923	1	BIRCH JOHNETTE E	954-667-5194	5600 MAYO ST APT 2	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997278	-80.199092
000223128	24386650	83078	1	DOCTOR MAYBANK	954-981-7647	5710 MAYO ST APT 1	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997392	-80.201357
000223130	46020138	70815	1	WILLIS KAYLOR	954-670-6989	5710 MAYO ST APT 2	HOLLYWOOD FL 33021	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.99738	-80.201392
000223132	2807219	66269	1	DIXON WARRICK LEE	786-291-1563	5710 MAYO ST APT 3	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997403	-80.201372
000223134	2256209	22652	1	MIKE PEGGY	754-423-5204	5712 MAYO ST APT A	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997417	-80.201507
000223136	2255233	22653	1	SAINVILLUS MARGARET BUDGETT	954-258-4328	5712 MAYO ST APT B	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.9974	-80.201512
000223138	2255367	22656	1	ORUKOTAN SHERIFAT	954-962-4655	5717 MAYO ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997512	-80.201545
000223140	46091906	73056	1	VIRGILE MADELAINE	954-213-3616	5719 MAYO ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997467	-80.201862
000223142	2254792	72704	1	BRYANT PAMELA S	786-286-2903	5750 MAYO ST APT 1	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997363	-80.202615
000223144	45991084	69216	1	VARGHESE NOBLE	954-534-2427	5750 MAYO ST APT 2	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997403	-80.202558
000223146	41181261	65083	1	ALLEN MALCOLM G.	954-962-3988	5840 MAYO ST	HOLLYWOOD FL 33021	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D		



## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000223148	6054267	52283	1	WARD JAMES	954-981-6095	5909 MAYO ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997619	-80.205442
000223152	2281112	32747	1	SAINT PIERRE LIMONTES & ELIAN	954-967-4656	1919 MAYO ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997597	-80.205832
000223156	6147817	77848	1	THOMPSON INVESTMENT MANAGEMENT LLC		5501 S STATE ROAD 7 EAST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997497	-80.206718
000223164	2279118	45795	1	AVELLANEDA 245 LLC	954-962-2226	5929 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998355	-80.206253
000223168	40078310	43032	1	FRANCIS MARY		5839 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998363	-80.204633
000223172	21045322	67535	1	CITY OF HOLLYWOOD-2202		5801 WILEY ST LSW18	HOLLYWOOD FL 33022	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.997744	-80.201054
000223174	41105477	59472	1	WILLIAMS TAMARRA	786-285-1804	5625 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99824	-80.199893
000223176	2256656	22749	1	ALEXANDER PATRICIA	954-989-1862	5518 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998198	-80.197757
000223182	6054275	52287	1	HALL DOROTHY J	954-989-3592	5346 WILEY ST .	HOLLYWOOD FL 33024	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998162	-80.197134
000223184	2707134	59382	1	ORION CHERLIE	305-733-0747	5225 WILEY ST	HOLLYWOOD FL 33021	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998238	-80.196517
000223186	41198120	67161	1	MURPHY SHIRLEY A.	305-223-0656	5222 PLUNKETT ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000223188	40070520	43097	1	MCLEROY JAMES W.	954-964-4450	5310 PLUNKETT ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998855	-80.19779
000223190	2256028	45874	1	HOLLY 1 LLC	954-572-9159	5660 RODMAN ST 4-5-6	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997582	-80.177983
000223192	45993658	70777	1	5236 PEMBROKE INC	786-367-7024	5613 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997552	-80.177973
000223194	2256036	22150	1	HOLLYWOOD QUALITY CARS	305-588-3473	5621 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997558	-80.177995
000223196	41181247	65429	1	5624 ENTERPRISES LLC	954-594-6669	5624 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.016688	-80.185713
000223202	40079018	50037	1	S & E AUTO REPAIR		5690 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998904	-80.200735
000223204	21449995	79981	1	VAROUJ SHIRINIAN	954-983-8182	5700 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998538	-80.201108
000223206	2254546	21423	1	PLUNKETT PROPERTIES LLC	954-966-8181	5691 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998967	-80.201445
000223208	45942158	70430	1	LEVY NORMA & SALVADOR	954-336-1879	5724 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000223210	6139778	78989	1	INTERCHEM LLC		5720 PLUNKETT ST FRNTR	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99889	-80.202097
000223212	46485029	79467	1	5750 ENTERPRISES LLC	954-594-6669	5746 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998826	-80.202546
000223214	41203837	66026	1	AE HOLLYWOOD LLC	707-932-5887	5791 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.999008	-80.202885
000223220	2281336	21436	1	DESOUZA DAVID	954-986-1457	5814 PLUNKETT ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99887	-80.203642
000223222	6054601	52258	1	A1 CUSTOM MICA INC	954-893-0063	5805 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999063	-80.203552
000223230	2279504	21446	1	ROSENBLATT SHAE & SHIRLE	954-962-1639	5839 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999052	-80.204688
000223232	40063827	21448	1	ARIAS MARIA T.	954-993-5020	5885 PLUNKETT ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998995	-80.20503
000223234	45942148	69863	1	BV ENTERPRISES LLC		5905 PLUNKETT ST BAY B	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.998885	-80.205707
000223236	63540274	87179	1	BV ENTERPRISES LLC		5905 PLUNKETT ST BAY A	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000223238	2178166	21934	1	LIQUID WASTE RECOVERY	954-552-0776	5909 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999052	-80.205465
000223240	21220265	76664	1	LIQUID WASTE RECOVERY	954-552-0776	5915 PLUNKETT ST	HOLLYWOOD FL 33024	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999055	-80.205573
000223242	63053388	87338	1	CALVO ZAIDA S.	954-376-9660	5925 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000223252	6077699	61562	1	VERUCCINO MOTORS INC	954-961-2981	5918 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996577	-80.20165
000223254	63053274	85859	1	EVERGLADES ENTERPRISES	954-274-5165	5916 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999617	-80.205777
000223256	6072377	67912	1	DEVELOP & WATER SVC INC	0-981-2100	5910 RODMAN ST A	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99911	-80.205193
000223258	63539831	87062	1	BRENNER SAM	954-981-2100	5910 RODMAN ST B	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.026275	-80.132365
000223262	24321708	83410	1	DEVELOPMENT & WATER SVC	0-981-2100	5910 RODMAN ST D	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	Mach 10 E-Coder	Neptune Mach10 E-Coder 5/8-1in 6D 1CuFt		
000223264	2178168	21949	1	PURAN HOLDINGS & INVESTMENTS INC	954-967-0803	5892 RODMAN ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99971	-80.204682
000223266	46269343	75641	1	MAZDA PROS INC	954-364-4344	5900 RODMAN ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	0	0
000223270	2256411	33030	1	PURAN HOLDINGS & INVESTMENTS INC	954-967-0803	5890 RODMAN ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999725	-80.204033
000223274	2281115	21957	1	J.S.D.W. LLC	305-944-5583	5829 RODMAN ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999722	-80.20423
000223278	45951224	72021	1	PERFECTION COLLISION CENTER	954-374-8384	5821 RODMAN ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999727	-80.203926
000223280	2178167	50918	1	SHIRINIAN VAROUJEAN	954-699-4587	5819 RODMAN ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999844	-80.20357
000223284	45993870	69957	1	AE HOLLYWOOD LLC	707-932-5887	5740 RODMAN ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999576	-80.202557
000223286	2281519	22162	1	PEW RANDY C	954-989-2098	5749 RODMAN ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999673	-80.202348
000223298	23001336	83512	1	HOLLY 1 LLC	954-572-9159	5660 RODMAN ST BTHRM	HOLLYWOOD FL 33021	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999956	-80.200663
000223300	40063950	22172	1	VANTAGE HOLDINGS LLC	954-593-5323	5633 RODMAN ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	25.999725	-80.200247
000223302	2279941	22171	1	E & R AUTO BODY REPAIR	954-404-0668	5630 RODMAN ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999662	-80.200332
000223304	63783133	88378	1	RAMCHARAN LAURALEE	954-961-1474	1056 S 56 AVE	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000673	-80.199103
000223306	21232737	75072	1	SNG COLLISION CENTER	305-904-3522	5617 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00044	-80.19998
000223308	6048391	50927	1	TYLER POLK TRUST	954-966-7600	5625 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000457	-80.200002
000223310	45991251	69173	1	FAISON ROBERT J		5629 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000501	-80.199995
000223312	41232345	72447	1	LOMAR APARTMENTS	954-966-7600	5633 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000477	-80.200413
000223314	45998961	71645	1	LOMAR APTS		5639 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000477	-80.200413
000223316	41132749	84557	1	ALL IN COLOR LLC	305-338-3164	5648 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000313	-80.200763
000223320	41232622	81666	1	WOLMAN ISRAEL & SUSAN	305-934-1181	5647 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000223322	2598265	50980	1	CONSTANTINE MOURLAS TRSTEE 5676 LAND TRU	954-479-7100	5676 FUNSTON ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000297	-80.201014
000223326	41204360	65545	1	TARGET AUTO INC	954-962-7865	5712 FUNSTON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000293	-80.201815
000223328	23004898	84261	1	TYLER ASSOCIATES		5721 FUNSTON ST 2	HOLLYWOOD FL 33021	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000459	-80.201873
000223330	45993807	70399	1	LOMAR APTS		5756 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000306	-80.20268
000223334	24321405	82400	1	AE HOLLYWOOD LLC	707-932-5887	5770 FUNSTON ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	26.000005	-80.203005
000223336	40080400	50989	1	SARG FINANCIAL LLC	954-967-6787	5820 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000306	-80.204073
000223338	41181122	65048	1	WOLFF GUY	954-806-6161	5826 FUNSTON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000306	-80.204222
000223340	46269832	76927	1	REGAL ASSET MANAGEMENT	954-989-9777	5834 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000297	-80.204552
000223342	40070646	21756	1	MARCHETTA (TRUSTEE) ANTHONY F	305-505-3195	5840 FUNSTON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000343	-80.20499
000223344	46269845	76865	1	WOLMAN ISRAEL	305-331-6853	5819 FUNSTON ST	HOLLYWOOD FL 33024	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.000451	-80.203959
000223346	2254343	21752	1	ISRAEL WOLMAN REV TR	305-934-1181	5903 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00049	-80.20551
000223348	2254499	21751	1	MAGIL ENTERPRISES LLC	954-709-7250	5980 FUNSTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000415	-80.206067

Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000223352	2254504	21740	1	HERNANDEZ WILFREDO	786-387-0936	5845 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001085	-80.204953
000223356	45974253	68819	1	LOMAR APTS	954-456-2662	5818 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001017	-80.204283
000223358	2281323	21729	1	GRAS FINANCIAL LLC	954-966-5571	5766 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001028	-80.202883
000223364	2281356	56664	1	QUENTIN GOMEZ MANAGEMENT INC	954-983-8811	5701 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001111	-80.201524
000223366	41023272	51028	1	ROBINSON RUSSELL	954-964-7567	5655 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001175	-80.201496
000223368	46091696	72717	1	WOLMAN ISRAEL	305-331-6853	5654 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001033	-80.201159
000223370	41197219	64664	1	TYLER ASSOCIATES	954-967-1148	5651 DAWSON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001155	-80.20121
000223372	45951226	68555	1	TYLER POLK TRUST	954-966-7600	5646 DAWSON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.000999	-80.20073
000223376	40067966	51031	1	KUTSKA BRUCE	954-770-0656	5614 DAWSON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001008	-80.199936
000223378	2254612	21771	1	KWIK STOP N129	954-964-7567	920 S 56 AVE	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001186	-80.199518
000223382	45993991	71143	1	DEWEY STREET ENTERPRISES INC	954-430-1880	5618 DEWEY ST	HOLLYWOOD FL 33020	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001715	-80.199868
000223384	2046221	21774	1	CORY PROPERTIES	954-270-5598	5619 DEWEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	26.001892	-80.19988
000223386	2254646	21780	1	SASY MORDECHAY	917-731-5639	5638 DEWEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001753	-80.200653
000223388	2734493	61887	1	FEDELIM JOE	954-583-4433	5639 DEWEY ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001875	-80.200785
000223390	21219939	75565	1	GOTTLIEB CHARLOTTE	954-381-1556	5702 DEWEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001703	-80.20152
000223392	2254617	21788	1	GOTTLIEB DBA LOMAR APTS		5704 DEWEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001703	-80.20152
000223396	40049249	21794	1	GOTTLIEB BRUCE	954-966-7600	5748 DEWEY ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.001763	-80.202783
000223402	24321788	82165	1	JOHNSON JULIAN R	954-989-6485	5835 DEWEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001817	-80.204283
000223404	21232790	79302	1	CALIBER BODYWORKS OF FLORIDA INC.	469-948-9649	5900 WASHINGTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 2 ProRead 6 Digit		
000223414	45950510	68849	1	THOMPSON INVESTMENT MGMT LLC	954-963-7717	5830 WASHINGTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002748	-80.204422
000223416	45974395	69717	1	THOMPSON ROBERT		5828 WASHINGTON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.002535	-80.204053
000223422	40049252	21816	1	HAMPTON COURT CONDO	305-431-5657	5801 WASHINGTON ST IRRIG	HOLLYWOOD FL 33021	1	BADGER	M-170 PD	Badger ADE M170 1 Encoder 6D 10 Cu. Ft.	26.002705	-80.202702
000223424	41204033	66165	1	WASHINGTON STREET LLC	954-709-0215	5742 WASHINGTON ST B	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.002533	-80.202817
000223426	41177257	79263	1	ALFORD JAMES	954-297-9860	5742 WASHINGTON ST A	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.002518	-80.202783
000223428	46020094	70766	1	SCRIVANI AL	786 262 7610	5708 WASHINGTON ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.	26.002515	-80.201348
000223430	2256789	21828	1	ISLAM RAFIQU	754-610-1295	5680 WASHINGTON ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00251	-80.200098
000223432	2807228	66270	1	JOSEPH ROSELYN	786-236-7252	5676 WASHINGTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00253	-80.2001
000223434	2256278	79265	1	CITY SHOPPING CENTER INC.		5672 WASHINGTON ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002538	-80.20012
000223436	2256281	21831	1	CITY SHOPPING CENTERS LLC	954 983 4100	5670 WASHINGTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002527	-80.200105
000223438	2100307	54114	1	E-Z WASH LAUNDROMAT INC.	617-306-3808	5666 WASHINGTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 1/2 ProRead 6 Digit	26.002542	-80.200058
000223440	2256282	21832	1	ZHU ZAI Y	954-989-7828	5664 WASHINGTON ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00252	-80.200108
000223442	2279131	21833	1	CITY SHOPPING CENTERS LLC	305-684-4195	5662 WASHINGTON ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.002532	-80.200083
000223450	2135956	21825	1	HOLIDAY PK 1	954-588-7144	5757 WASHINGTON ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 2 ProRead 6 Digit	26.002758	-80.20137
000223838	45950769	68504	1	WALGREENS STORE #4386	217-443-0410	5999 PEMBROKE RD	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.995958	-80.206846
000223838	45993810	70704	1	WALGREENS STORE #4386	217-443-0410	5999 PEMBROKE RD	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.995958	-80.206846
00023282	2281505	21721	1	TYLER POLK TRUST	954-966-7600	5722 DAWSON ST	HOLLYWOOD FL 33024	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001085	-80.202098
000232556	22552119	21785	1	GLENN B. CUMMINGS INC. DBA SUNSHINE	954-962-7600	5706 DEWEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.00172	-80.20151
000237296	2279025	21439	1	LOMAR	954-527-9964	5822 PLUNKETT ST	HOLLYWOOD FL 33024	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998873	-80.20409
000237318	46091904	73020	1	LOMAR	954-989-4333	5848 PLUNKETT ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998885	-80.204998
000237420	40081911	41748	1	ELZY TERRI	954-279-0855	5701 FLETCHER ST	HOLLYWOOD FL 33024	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99598	-80.201212
000237480	40078521	43128	1	INMAN GEORGETTE LASLEY	954-237-9844	5220 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998143	-80.196395
000237668	40082051	41823	1	MCKINNEY JR ALLAN	954-987-3629	5644 FLAGLER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996725	-80.199997
000237674	63540347	86779	1	ZAR 18 LLC	347-623-5710	5714 PLUNKETT ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998813	-80.201786
000238064	2487979	73254	1	HIDDEN COURT TOWNHOMES HOA INC	954-232-5913	5863 WASHINGTON ST	HOLLYWOOD FL 33024	1	Sensus/Invensys	W-TURBO TURB	SENSUS,ICE,8,WTURBO,6DIGIT,100CuFt	26.002729	-80.204682
000238064	2487979	73255	1	HIDDEN COURT TOWNHOMES HOA INC	954-232-5913	5863 WASHINGTON ST	HOLLYWOOD FL 33024	2	Sensus/Invensys	W-TURBO TURB	SENSUS,ICE,2,WTURBO,6DIGIT,10CuFt	26.002729	-80.204682
000238286	46269406	76232	1	WRIGHT BEVERLY V	954-986-0591	5827 WILEY ST	HOLLYWOOD FL 33024	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998307	-80.204185
000238288	2178852	21938	1	MISHELE SAMUEL	954-983-2156	5960 PLUNKETT ST	HOLLYWOOD FL 33024	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998935	-80.206198
000241250	40070514	43069	1	BEAULIERE JEAN & KAREN	786-326-4175	5309 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998297	-80.196988
000241252	41204286	65415	1	BLACK ALFREDA R	954-588-6668	5547 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998264	-80.198391
000241752	41001189	73904	1	CLARK THEODORE	954-907-1532	5250 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995877	-80.196657
000241752	46091514	77191	1	CLARK THEODORE	954-907-1532	5250 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995877	-80.196657
000241764	2281525	21939	1	MISHELE SAMUEL	954-983-2156	5940 PLUNKETT ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99896	-80.20621
000242848	40081910	41737	1	WITHERSPOON DANATTE	954-985-9653	5747 FLETCHER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.995987	-80.202828
000243120	2255223	21792	1	E & L JOHNSTON INVT.BWD INC.	954-275-5567	5731 DEWEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	26.001882	-80.202457
000243146	46269119	77390	1	BENBOW JOYCE	954-985-2634	5750 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998151	-80.202776
000243370	2255230	22658	1	PALANQUE LOUISIANNE	954-894-2371	5721 MAYO ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997492	-80.201852
000243542	6147862	76137	1	MCLEAN JEROME	954-708-9000	5760 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998132	-80.202025
000243584	46091464	79174	1	PATINO HERBERT	954-394-9216	5721 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 1/2 ProRead 6 Digit	25.99603	-80.201765
000244352	2099588	33029	1	ALI MOHAMED R	954-683-2335	5917 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998325	-80.205708
000250868	2255365	22662	1	MOISE TAMARA	305-761-8341	5729 MAYO ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.997523	-80.202162
000251158	6061751	56673	1	FILS AIME BENS WALKER	954-381-6721	5217 FLETCHER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996086	-80.195711
000251238	6048330	50823	1	ISLANDER APARTMENTS LLC	954-458-2826	5515 PLUNKETT ST IRRIG	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 2 ProRead 6 Digit	25.999003	-80.198702
000253794	40070712	59005	1	FERNANDEZ BEATRICE	954-740-3452	5614 FLAGLER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.996619	-80.199598
000253836	45974179	69799	1	JEAN-BAPTISTE ANTOINETTE	305-440-6671	5211 FLETCHER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.99606	-80.195753
000253856	40078305	43072	1	SPATES LILLIE	954-251-1496	5326 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998148	-80.196847
000255912	40078335	43067	1	WITHERSPOON CHERELL V	954-483-7231	5356 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998138	-80.197153
000255982	46406776	80660	1	ISLANDER APARTMENTS LLC	954-458-2826	5515 PLUNKETT ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 1/2 ProRead 6 Digit	25.999399	-80.198528
000257446	24322497	82096	1	FILLMORE KENNETH	754-801-9262	5643 W							

## Hollywood Water Meter Listing

AccountNum	MTU ID	Meter ID	Active	Name	Phone1	Address1	Address2	Port	Vendor	Model	Description	Latitude	Longitude
000257448	2650028	59166	1	LES WILEY STREET LLC	954-559-8634	5651 WILEY ST IRRIG	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	0	0
000257450	45974252	69621	1	MCLAMORE JULIETTE G	954-639-6674	5645 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998415	-80.200687
000257452	41106754	59298	1	CITY OF HOLLYWOOD DEPT OF COMMUNITY & EC		5647 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998408	-80.200955
000257454	45951382	71032	1	BAKER ERICKA L	954-274-8391	5649 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99864	-80.200938
000257456	21265646	78599	1	HARRIS STEFANA	954-347-2648	5651 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998192	-80.20096
000257458	41106748	59302	1	LES WILEY STREET LLC	954-559-8634	5653 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998192	-80.20096
000257460	41105480	59292	1	PIERRE WILFRED	954-266-9175	5629 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998683	-80.20028
000257462	41105482	59294	1	LEVENE RICHARDSON ARIELLE AMANDA	239-990-1784	5633 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998408	-80.200458
000257464	21265505	79123	1	POITEVIEN J STVIL & STEVEN	678-751-4190	5637 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998385	-80.200682
000257466	41105478	59297	1	BAKER SHARON D.	954-710-0524	5639 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998385	-80.200682
000257468	41105481	59293	1	BURTON CHRISTOPHER	305-570-5485	5631 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998683	-80.20028
000257472	24321466	84595	1	MATHURIN DUREEN	954-854-1820	5617 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998647	-80.19972
000257474	46091431	71902	1	TONEY NICOLA P.	954-226-4893	5619 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998923	-80.200297
000257476	46269387	76168	1	LES WILEY STREET LLC	954-559-8634	5621 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998923	-80.200297
000257478	2650030	59290	1	LES WILEY STREET LLC	954-559-8634	5623 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.99827	-80.19991
000257480	45950500	68541	1	BALLARD TONYA E	786-597-6113	5601 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998223	-80.199077
000257482	2807333	66613	1	HACKETT THEOPHILUS	305-987-3124	5603 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998223	-80.199077
000257484	21035575	67240	1	POWELL WINSTON & PAULETTE	305-609-3821	5605 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998212	-80.199342
000257486	46269841	76928	1	HERNANDEZ SONIA	954-562-6311	5607 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998212	-80.199342
000257488	41105484	59284	1	SAINTILMON S COOPER & RENANT	305-632-9209	5609 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998385	-80.199518
000257490	46023049	70753	1	WILLIAMS MICHELL D	786-975-9790	5611 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998285	-80.199518
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000257650	46268603	75137	1	WALKER KEYUANA S	954-662-6983	5628 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.999042	-80.199492
000257654	45993640	70701	1	COMMUNITY ENHANCEMENT COLLABORATION INC	954-629-9142	5648 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit	25.998127	-80.200702
000257714	46020152	70474	1	LES WILEY STREET LLC	954-559-8634	5628 WILEY ST IRRIG	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit	25.998115	-80.200167
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000300009	45993642	70755	1	COULSON DALTON	754-244-5518	5624 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
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000300115	21225347	74583	1	HOWARD WALTER	305-308-9932	5732 WILEY ST	HOLLYWOOD FL 33020	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
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000300129	6139877	75069	1	PURAN HOLDINGS & INVESTMENTS INC	954-967-0803	5896 RODMAN ST	HOLLYWOOD FL 33023	1	BADGER	M-25	Badger ADE M25 5/8 Encoder 6D 1 Cu. Ft.		
000300141	46408536	80396	1	MARTELL JESSICA	305-720-4890	5905 WILEY ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
000300154	6147906	77107	1	JARAMILLO EMISAEAL JOSE	786-781-9084	5732 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 5/8 ProRead 6 Digit		
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000300377	46408871	80502	1	HOLLYWOOD STATE ROAD 7 LLC	954-927-4885	775 S STATE ROAD 7 HSIB	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit		
000300599	63053737	85501	1	LES WILEY STREET LLC	954-559-8634	5608 WILEY ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		
000300601	21961008	83180	1	BANK OF AMERICA	518-824-0323	851 S STATE ROAD 7	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit		
000300601	21961009	83179	1	BANK OF AMERICA	518-824-0323	851 S STATE ROAD 7	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	T-10 PD	Nept/Schlum T-10 1 ProRead 6 Digit		
000300607	21961066	83838	1	FARRINGTON-JOHNSON JABRINA	786-768-6040	5760 FLAGLER ST	HOLLYWOOD FL 33023	1	SCHLUM/NEPTUNE	Mach 10 E-Coder	Neptune Mach10 E-Coder 5/8-1in 6D 1CuFt		
000301158	63053218	86068	1	FERIA DEYVIS M.	305-922-4382	5656 FLETCHER ST	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 1" 8D 0.01 CuFt		
000301168	63539559	86872	1	CITY OF HOLLYWOOD - 2202	954-921-3288	5960 FUNSTON ST LSW24	HOLLYWOOD FL 33021	1	SCHLUM/NEPTUNE	Mach 10	Neptune Mach 10 5/8" x 3/4" 8D 0.01 CuFt		



# **APPENDIX G**

# **GEOTECHNICAL** **REPORT**

## **GEOTECHNICAL DATA REPORT**

**Washington Park/Lawn Acres Gravity  
Sewer Replacement  
Along S 56<sup>th</sup> Avenue, Dawson Street,  
Duston Street and Rodman Street  
Hollywood, Florida**

**PSI Project No. 0397-1546**

### **PREPARED FOR:**

**Tetra Tech, Inc.  
4601 Sheridan Street, Suite 212  
Hollywood, Florida 33021**

***Revised August 25, 2020***

### **BY:**

**PROFESSIONAL SERVICE INDUSTRIES, INC.  
7950 NW 64<sup>th</sup> Street  
Miami, Florida 33166  
Phone: (305) 471-7725  
Fax: (305) 593-1915**







Professional Service Industries, Inc.  
7950 NW 64<sup>th</sup> Street  
Miami, FL 33166  
Office – (305) 471-7725

*Revised August 25, 2020*

**Tetra Tech, Inc.**

4601 Sheridan Street, Suite 212  
Hollywood, Florida 33021

Attn: Mr. Ken Caban, P.E. – Vice President

Re: Geotechnical Data Report

**Washington Park/Lawn Acres Gravity Sewer Replacement**

**Along S 56<sup>th</sup> Avenue, Dawson Street, Fuston Street and Rodman Road**

**Hollywood, Florida**

PSI Project No. 0397-1546

Dear Mr. Caban:

**Professional Service Industries, Inc. (PSI), an Intertek company**, is pleased to submit this Geotechnical Data Report for the referenced project. The previous report, submitted on August 25, 2020, includes the results from the field and laboratory investigation for use in preparation of the appropriate design and construction documents for this project. This revision addresses Tetra Tech's review comments.

PSI appreciates the opportunity to provide this Geotechnical Data Report and looks forward to continuing participation during the design and construction phases of this project. PSI also has great interest in providing materials testing and inspection services during the construction of this project and will be glad to meet with you to further discuss how we can be of assistance as the project advances.

If there are questions pertaining to this report, or if PSI may be of further service, please contact us at your convenience.

Respectfully submitted,

**PROFESSIONAL SERVICE INDUSTRIES, INC.**

Certificate of Authorization No: 3684

Lucrèce E. Regisme  
Staff Engineer – Geotechnical Services

LER/JNG/ler

Jose N. Gómez, P.E., D.GE  
Chief Engineer-Geotechnical Services  
P.E.78289



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Boring Logs
Summary of Boring Locations
Summary of Laboratory Test Results
Key to Terms and Symbols Used on Logs

### APPENDIX C

Pavement Cores Photographs
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## 1.0 PROJECT INFORMATION

### 1.1 PROJECT AUTHORIZATION

**Professional Service Industries, Inc. (PSI), an Intertek company**, has completed a field exploration and geotechnical evaluation for the Proposed Gravity Sewer Replacement Project in Hollywood, Florida. The following table provides Project Authorization information.

**Table 1.1-1: Project Authorization**

<b>Project Name</b>	Washington Park/Lawn Acres Gravity Sewer Replacement
<b>Project Location</b>	Along S 56 <sup>th</sup> Ave, Dawson St, Fuston St and Rodman St in Hollywood, Florida.
<b>Proposal (Contract) Signed By</b>	Ken Caban, P.E. – Vice President
<b>Authorization Company</b>	Tetra Tech, Inc.
<b>Authorization Date</b>	July 22, 2020
<b>PSI Proposal # or Contract #</b>	0397-316264
<b>PSI Proposal Contents</b>	Scope of Work, Lump Sum Fee, and PSI's General Conditions

### 1.2 PROJECT DESCRIPTION

Based on information provided by Tetra Tech, Inc., PSI's review of the Sanitary Sewer Overall Map Sheet G-004A, a summary of our understanding of the proposed project is provided below in the Project Description table.

**Table 1.2-1: General Project Description**

<b>Project Items</b>	Design and installation of gravity sewer lines along multiple streets, outlined on the provided Sanitary Sewer Overall Map Sheet G-004A, elaborated by Tetra Tech, Inc.
<b>Existing Grade Change within Project Site</b>	± Two feet estimate (Google Earth Pro)

The geotechnical data presented in this report are based on the available project information, and the subsurface materials encountered during the field investigation. If the noted information is incorrect, please inform PSI so that the information presented in this report can be amended as necessary. PSI will not be responsible for the implementation of provided information if not notified of changes in the project.

### 1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this study is to evaluate the subsurface conditions at the site and provide geotechnical data to aid in Tetra Tech's engineering recommendations and guidelines for use in preparing the design and other related construction documents associated with the proposed gravity sewer replacement project. The scope of services included drilling soil borings, performing laboratory testing, and preparing this geotechnical data report.



This data report briefly outlines the available project information, describes the site and subsurface conditions as encountered in the seven Standard Penetration Testing (SPT) drilled to depths of 12 to 17 feet below existing grades (Figure 2, Appendix A).

The scope of services for this geotechnical exploration did not include an environmental, mold nor detailed seismic/fault assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air on or below, or around this site. Statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.



## 2.0 SITE AND SUBSURFACE CONDITIONS

### 2.1 SITE DESCRIPTION

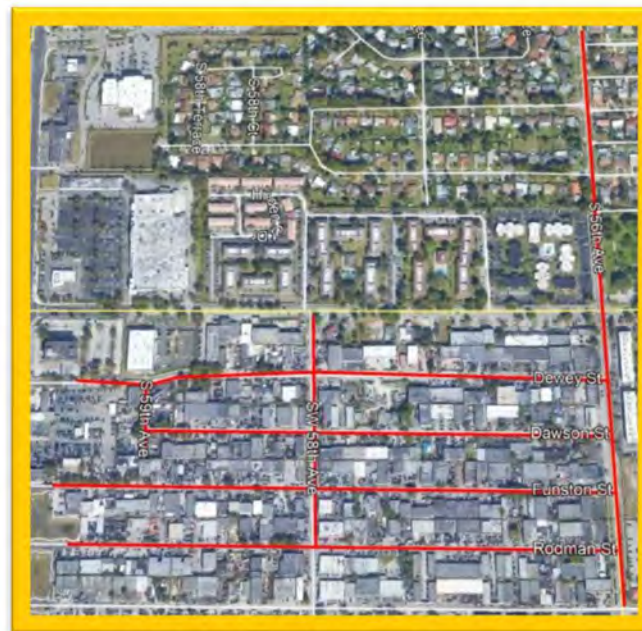
The following table provides a generalized description of the existing site conditions based on visual observations during the field activities, as well as other available information.

**Table 2.1-1: Site Description**

<b>Site Location</b>	Washington Park/Lawn Acres, along S 56 <sup>th</sup> Avenue, Dawson Street, Fuston Street and Rodman Street in Hollywood, Florida.
<b>Site History</b>	Based on our review of Google Earth Pro Aerial Photographs from 1994 through 2020, the site appears to have been developed with the existing roads for the past 26 years
<b>Existing Site Ground Cover</b>	Paved road.
<b>Existing Grade/Elevation Changes</b>	Approximately EL +8.0 to +10.0 feet (Google Earth Pro).
<b>Description of Adjacent Property</b>	North: Multi-family residential communities. East: Multi-family residential communities. West: Commercial Properties. South: Single-family residential communities.

### 2.2 SITE PHOTO

The following photograph shows the project area for the proposed gravity sewer replacement. The soil borings were conducted along the roadways highlighted in red, See Figure 2, Appendix A, for the Boring Location plan.



**Figure 2.2-1: Aerial photograph of the project area**

## 2.3 FIELD EXPLORATION

Field exploration for the Gravity Sewer Replacement project consisted of conducting seven pavement cores and drilling a total of seven SPT borings (B-01 to B-07). The boring design element, boring labels, approximate depths and drilling footage are provided in the following table.

**Table 2.3-1: Field Exploration Summary**

Design Element	Number of Borings	Boring Depth (ft)	Drilling Footage (feet)
S 56 <sup>th</sup> Avenue	1	15	15
	2	13	26
	1	12	12
Dawson Street	1	12	12
Fuston Street	1	17	17
Rodman Street	1	12	12
<b>TOTAL:</b>			<b>94</b>

The boring locations were selected by Tetra Tech, Inc. and located in the field by PSI using a recreational-grade GPS system. Elevations of the ground surface at the boring locations were not provided and should be surveyed by others prior to construction. The references to elevations of various subsurface strata are based on depths below existing grade at the time of drilling. The approximate boring locations are depicted on the Boring Location Plan provided in Figure 2, Appendix A. The following table summarizes the characteristics of the field exploration and drilling.

**Table 2.3-2: Field Exploration Description**

<b>Drilling Equipment</b>	Truck Mounted Drilling Rig
<b>Drilling Method</b>	Mud-Rotary
<b>Drilling Procedure</b>	Applicable ASTM and PSI Safety Manual
<b>Field Testing</b>	Standard Penetration Test (ASTM D1586)
<b>Sampling Procedure</b>	ASTM D1587/1586
<b>Sampling Frequency</b>	Continuously to a depth of 10 Feet and at 5-foot intervals thereafter
<b>Frequency of Groundwater Level Measurements</b>	During Drilling
<b>Boring Backfill Procedures</b>	Grouting

During field activities, the encountered subsurface conditions were observed, logged, and visually classified (in general accordance with ASTM D2487). Field notes were maintained to summarize soil types and descriptions, water levels, changes in subsurface conditions, and drilling conditions.



## 2.4 LABORATORY TESTING PROGRAM

The soil samples recovered from the borings were visually reviewed in the laboratory by a geotechnical engineer to confirm the field classifications. The samples were classified using the Unified Soil Classification System (USCS) in general accordance with the American Society of Testing and Materials (ASTM) test designation D2487. The soil classification was based on visual observations and laboratory testing which included organic content (ASTM D2974), moisture content (ASTM D2216) and material finer than number 200 sieve (ASTM D1140).

## 2.5 SITE GEOLOGY

South Florida region is located on the southern flank of Florida Plateau, a stable, carbonate platform on which thick deposits of limestones, dolomites, and evaporates have accumulated; these deposits and associated geological formations were deposited during the Pleistocene epoch. The general geology of the upper 200 feet of this platform within the area of South Florida where the proposed project is to be located is composed predominantly of limestone and quartz sand. The geological formations that usually are encountered from top to bottom within Broward County are the Pamlico Formation (sands and organic silt and peat), Miami Formation within the upper 20 to 50 feet (oolitic limestone) and Fort Thompson Formation within depths intervals of 50 to 500 feet (intercalations of sand with limestone and cemented sand with limestone and cemented sand and shell).

## 2.6 SUBSURFACE CONDITIONS

The results of the field and laboratory investigation have been used to generalize a subsurface profile at the project site and within the boring locations shown in Figure 2 of Appendix A. The following subsurface descriptions provide a highlighted generalization of the major subsurface stratification features and material characteristics based on the borings and samples visual description.

**Table 2.6-1: Generalized Soil Profile Description**

Stratum	Top (ft)	Bot. (ft)	Soil Type	N Range	Density
-	0.0	0.5	Asphalt [1.5 to 6.3 inches] as surface cover (as seen on the asphalt core photographs attached in Appendix C)	-	-
1	0.13	2.00	Limerock (Crushed Limestone Fill)	5 - 18	Loose to Medium Dense
2	0.5	6.0	SAND (SP) [Pamlico Formation]	4 - 11	Very Loose to Medium Dense
3	4.0	8.0	Weathered Limestone/SAND with Limestone Fragments & Cemented Sand [Miami Formation]	5 - 14	Loose to Medium Dense
4	8.0	17.0	SAND (SP) [Fort Thompson Formation]	5 - 18	Loose to Medium Dense





*Where: N=Standard Penetration Test blow count (blows/foot)-See Key to Terms and Symbols Used on Logs, Appendix B*

The boring logs included at the end of the Appendix B should be reviewed for specific information at individual boring locations. The boring logs include soil descriptions, stratifications, locations of the samples, and field and laboratory test data. The descriptions provided on the logs only represent the conditions at that actual boring location; the stratifications represent the approximate boundaries between subsurface materials. The actual transitions between strata may be more gradual and less distinct. Variations will occur and should be expected across the site. If variations in subsurface conditions from those described are noted during construction, recommendations in this report may need to be re-valuated.

#### **2.6.1 GROUNDWATER INFORMATION**

Water level measurements were performed during drilling operations. No further water measurements were conducted after drilling was finished. Specific information concerning groundwater is noted on each boring log presented in Appendix B of this report.

The groundwater table was measured in the boreholes at a depth of approximately eight and a half to nine feet below existing grades during the drilling operations conducted in August 2020. Please note that groundwater levels fluctuate seasonally in response to rainfall, local drainage patterns and the infiltration rate of the soil. The rainy season in South Florida is normally between May and October, and usually September is the highest rainfall month. Based upon our interpretation of the SPT boring data, it appears that the seasonal high groundwater level can be found above and to a depth seven to seven and a half feet below existing grades. If a detailed water level evaluation is required, observation wells or piezometers can be installed at the site to monitor water levels.

The groundwater levels presented in this report were measured at the time of PSI field activities in August 2020; the contractor should determine the actual groundwater levels at the site before construction activities.



### **3.0 DATA REPORT LIMITATIONS**

Our professional services have been performed and findings obtained in accordance with generally accepted geotechnical engineering principles and practices at the time of this data report preparation. PSI is not responsible for the conclusions, opinions or recommendations made by others based on this data. No other warranties are implied or expressed.

The scope of investigation was intended to evaluate soil conditions within the influence of the proposed sewer pipelines and within each boring locations. The applicability of the data report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed construction.

This report has been prepared for the exclusive use of Tetra Tech, Inc. and their design consultants, for the specific application to the design and construction of the proposed Washington Park/Lawn Acres Gravity Sewer Replacement project in Hollywood, Florida.



## **APPENDIX A**

## SITE VICINITY MAP

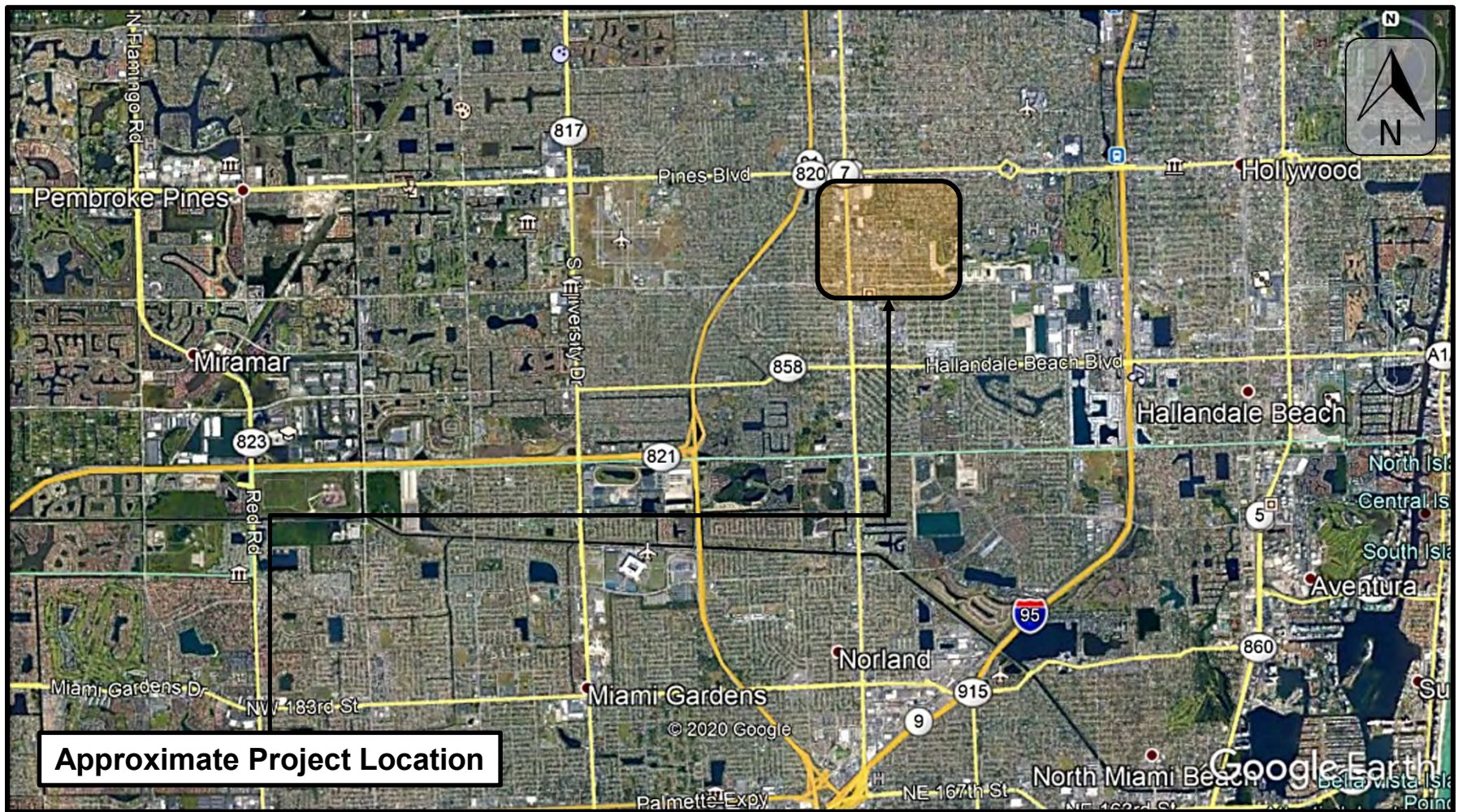


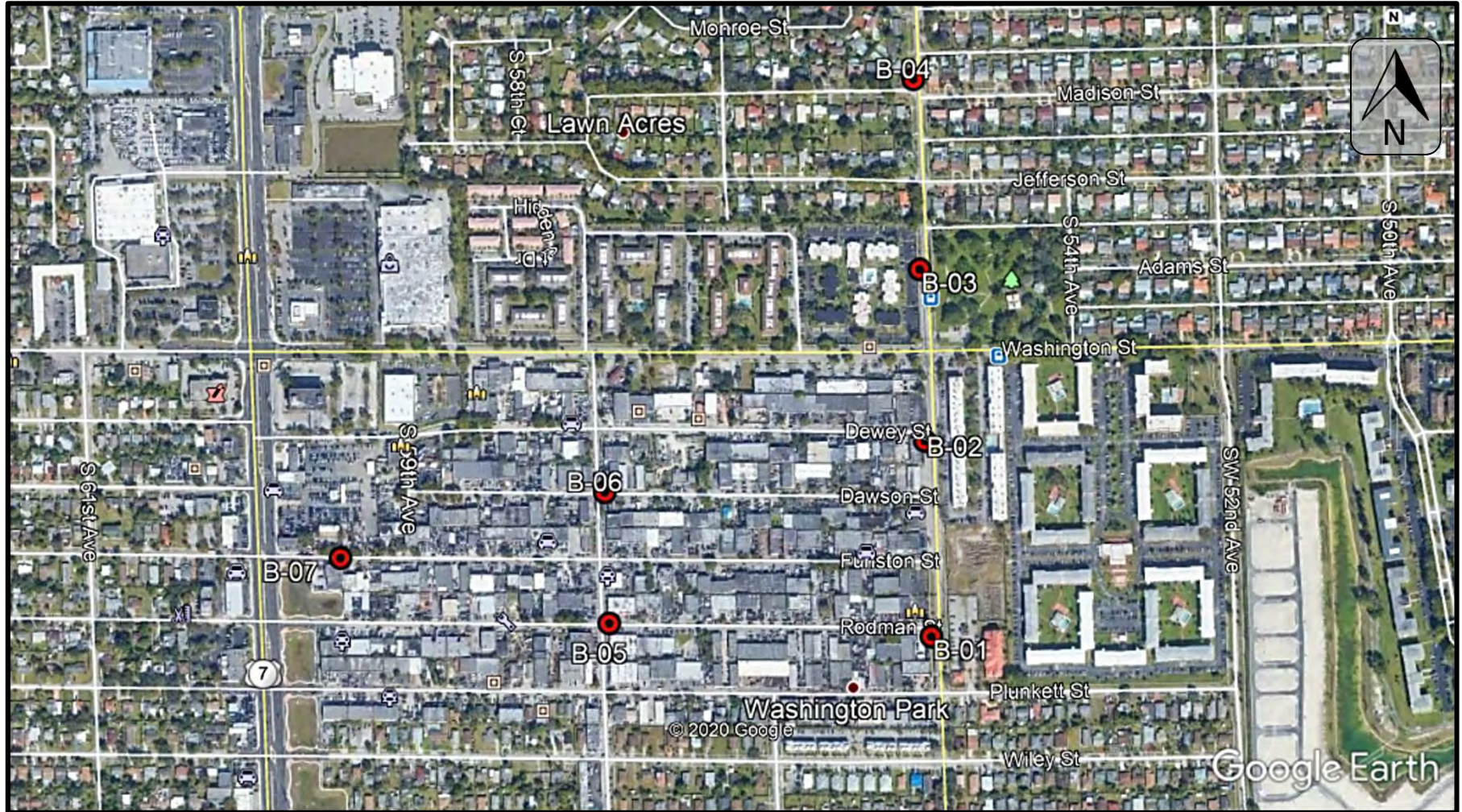
FIGURE No.:	1
DRAWN BY:	AVL
CHECKED BY:	JNG

GEOTECHNICAL ENGINEERING SERVICES  
City of Hollywood Gravity Mains  
City of Hollywood  
Broward County, Florida  
PSI PROJECT No.: 0397-1546  
DATE: 08/10/2020

intertek  
psi



# BORING LOCATION PLAN



● Approximate SPT Boring Location




FIGURE No.: 2  
DRAWN BY: AVL  
CHECKED BY: JNG

GEOTECHNICAL ENGINEERING SERVICES  
City of Hollywood Gravity Mains  
City of Hollywood  
Broward County, Florida  
PSI PROJECT No.: 0397-1546  
DATE: 08/10/2020

intertek  
psi

## **APPENDIX B**

DATE STARTED:	8/3/20	DRILL COMPANY:	PSI, Inc.
DATE COMPLETED:	8/3/20	DRILLER:	LR
COMPLETION DEPTH	12.0 ft	LOGGED BY:	AVL
BENCHMARK:	N/A	DRILL RIG:	CME-55
ELEVATION:	N/A	DRILLING METHOD:	Rotary Drilling
LATITUDE:		SAMPLING METHOD:	SS
LONGITUDE:		HAMMER TYPE:	Automatic
STATION:	N/A	EFFICIENCY	N/A
OFFSET:	N/A	REVIEWED BY:	JNG
REMARKS:			

BORING B-01		
Water		While Drilling 8.5 feet
		Upon Completion 8.5 feet
		Delay N/A

**BORING LOCATION:**  
See Figure No. 2

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @				Additional Remarks		
									×	Moisture	■	PL		+	LL
									STRENGTH, tsf						
									0	25	50				
									0	2.0	4.0				
	0					ASPHALT (6.30" Thick)									
				1		Brown LIMEROCK with Fine to Medium Grained Sand	GP-GM	9-7-7-6 N=14							
				2		Brown Fine to Medium Grained SAND (Pamlico Formation)	SP	6-6-5-6 N=11							
	5			3				6-5-4-4 N=9							
				4		Light Brown Weathered Oolitic LIMESTONE (Miami Formation)		6-8-6-6 N=14							
				5		▼ Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)	SP	5-4-3-4 N=7							
	10			6		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	5-4-3-5 N=7							
						END OF BORING									

Professional Service Industries, Inc.  
7950 N.W. 64th Street  
Miami, FL 33166  
Telephone: (305) 471-7725

**PROJECT NO.:** 0397-1546  
**PROJECT:** City of Hollywood Gravity Mains  
**LOCATION:** City of Hollywood  
 Broward County, Florida



DATE STARTED: 8/3/20	DRILL COMPANY: PSI, Inc.	BORING B-02
DATE COMPLETED: 8/3/20	DRILLER: LR      LOGGED BY: AVL	
COMPLETION DEPTH: 14.0 ft	DRILL RIG: CME-55	
BENCHMARK: N/A	DRILLING METHOD: Rotary Drilling	
ELEVATION: N/A	SAMPLING METHOD: SS	
LATITUDE:	HAMMER TYPE: Automatic	
LONGITUDE:	EFFICIENCY: N/A	
STATION: N/A      OFFSET: N/A	REVIEWED BY: JNG	

**Water**  
 ∇ While Drilling 9.0 feet  
 ▼ Upon Completion 9.0 feet  
 ∇ Delay N/A

**BORING LOCATION:**  
 See Figure No. 2

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
									X Moisture      PL LL 0                      25                      50	
									STRENGTH, tsf ▲ Qu                      * Qp 0                      2.0                      4.0	
0				1		ASPHALT (3.00" Thick)	GP-GM	12-9-9-8 N=18		
				2		Brown LIMEROCK with Fine to Medium Grained Sand				
				3		Brown Fine to Medium Grained SAND (Pamlico Formation)	SP	5-5-4-4 N=9		
5				4		Light Brown Weathered Oolitic LIMESTONE (Miami Formation)		3-3-3-5 N=6		
				5		Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)	SP	8-10-7-7 N=17		
10				6				4-2-2-3 N=4		
				7		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	3-3-5-7 N=8		
						END OF BORING		5-8-10-6 N=18		






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PROJECT NO.: 0397-1546  
 PROJECT: City of Hollywood Gravity Mains  
 LOCATION: City of Hollywood  
 Broward County, Florida




DATE STARTED:	8/3/20	DRILL COMPANY:	PSI, Inc.
DATE COMPLETED:	8/3/20	DRILLER:	LR
COMPLETION DEPTH	14.0 ft	LOGGED BY:	AVL
BENCHMARK:	N/A	DRILL RIG:	CME-55
ELEVATION:	N/A	DRILLING METHOD:	Rotary Drilling
LATITUDE:		SAMPLING METHOD:	SS
LONGITUDE:		HAMMER TYPE:	Automatic
STATION:	N/A	EFFICIENCY	N/A
OFFSET:	N/A	REVIEWED BY:	JNG
REMARKS:			



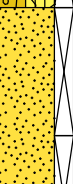

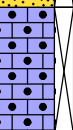

BORING B-03		
Water		While Drilling 8.8 feet
		Upon Completion 8.8 feet
		Delay N/A

**BORING LOCATION:**  
See Figure No. 2

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification		Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @				Additional Remarks
										Moisture		PL LL		
										STRENGTH, tsf				
										0	25	50		
										0	2.0	4.0		
	0					ASPHALT (3.00" Thick)								
				1		Brown LIMEROCK with Fine to Medium Grained Sand	GP-GM	10-6-7-6 N=13						
				2		Brown Fine to Medium Grained SAND (Pamlico Formation)	SP	7-4-3-3 N=7						
	5			3		Light Brown Weathered Oolitic LIMESTONE (Miami Formation)		5-5-4-3 N=9						
				4		Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)		6-6-8-6 N=14						
				5		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	6-4-3-2 N=7						
	10			6		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	2-2-4-5 N=6						
				7				5-6-7-4 N=13						
						END OF BORING								

	Professional Service Industries, Inc.	<b>PROJECT NO.:</b>	0397-1546
	7950 N.W. 64th Street	<b>PROJECT:</b>	City of Hollywood Gravity Mains
	Miami, FL 33166	<b>LOCATION:</b>	City of Hollywood
	Telephone: (305) 471-7725		Broward County, Florida

<b>DATE STARTED:</b> 8/3/20 <b>DATE COMPLETED:</b> 8/3/20 <b>COMPLETION DEPTH:</b> 15.0 ft <b>BENCHMARK:</b> N/A <b>ELEVATION:</b> N/A <b>LATITUDE:</b> <b>LONGITUDE:</b> <b>STATION:</b> N/A <b>OFFSET:</b> N/A <b>REMARKS:</b>	<b>DRILL COMPANY:</b> PSI, Inc. <b>DRILLER:</b> LR <b>LOGGED BY:</b> AVL <b>DRILL RIG:</b> CME-55 <b>DRILLING METHOD:</b> Rotary Drilling <b>SAMPLING METHOD:</b> SS <b>HAMMER TYPE:</b> Automatic <b>EFFICIENCY:</b> N/A <b>REVIEWED BY:</b> JNG	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">BORING B-04</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="3" style="width: 5%; text-align: center; font-weight: bold;">Water</td> <td style="width: 10%; text-align: center;">▽</td> <td style="width: 75%;">While Drilling</td> <td style="width: 10%; text-align: right;">9.0 feet</td> </tr> <tr> <td style="text-align: center;">▼</td> <td>Upon Completion</td> <td style="text-align: right;">9.0 feet</td> </tr> <tr> <td style="text-align: center;">▽</td> <td>Delay</td> <td style="text-align: right;">N/A</td> </tr> </table> <b>BORING LOCATION:</b> See Figure No. 2	Water	▽	While Drilling	9.0 feet	▼	Upon Completion	9.0 feet	▽	Delay	N/A
Water	▽	While Drilling		9.0 feet								
	▼	Upon Completion		9.0 feet								
	▽	Delay	N/A									








Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
								X Moisture <span style="border: 1px solid black; padding: 0 2px;"> </span> PL <span style="border: 1px solid black; padding: 0 2px;"> </span> LL		
								STRENGTH, tsf ▲ Qu    * Qp		
								0    25    50 0    2.0    4.0		
0				1		ASPHALT (2.50" Thick)	GP-GM	6-4-5-5 N=9		
				2		Brown LIMEROCK with Fine to Medium Grained Sand		5-6-5-4 N=11		
				3		Brown Fine to Medium Grained SAND (Pamlico Formation)	SP	4-3-3-3 N=6		
5				4		Light Brown Weathered Oolitic LIMESTONE (Miami Formation)		3-4-6-6 N=10		
				5		Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)	SP	4-6-5-4 N=11		
10				6		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	4-3-3-3 N=6		
15						END OF BORING				



Professional Service Industries, Inc.  
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 Telephone: (305) 471-7725

**PROJECT NO.:** 0397-1546  
**PROJECT:** City of Hollywood Gravity Mains  
**LOCATION:** City of Hollywood  
 Broward County, Florida

<b>DATE STARTED:</b> 8/3/20 <b>DATE COMPLETED:</b> 8/3/20 <b>COMPLETION DEPTH:</b> 12.0 ft <b>BENCHMARK:</b> N/A <b>ELEVATION:</b> N/A <b>LATITUDE:</b> <b>LONGITUDE:</b> <b>STATION:</b> N/A <b>OFFSET:</b> N/A <b>REMARKS:</b>	<b>DRILL COMPANY:</b> PSI, Inc. <b>DRILLER:</b> LR <b>LOGGED BY:</b> AVL <b>DRILL RIG:</b> CME-55 <b>DRILLING METHOD:</b> Rotary Drilling <b>SAMPLING METHOD:</b> SS <b>HAMMER TYPE:</b> Automatic <b>EFFICIENCY:</b> N/A <b>REVIEWED BY:</b> JNG	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">BORING B-05</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="3" style="width: 5%; text-align: center; font-weight: bold;">Water</td> <td style="width: 10%; text-align: center;">▽</td> <td style="width: 75%;">While Drilling</td> <td style="width: 10%; text-align: right;">8.9 feet</td> </tr> <tr> <td style="text-align: center;">▼</td> <td>Upon Completion</td> <td style="text-align: right;">8.9 feet</td> </tr> <tr> <td style="text-align: center;">▽</td> <td>Delay</td> <td style="text-align: right;">N/A</td> </tr> </table> <b>BORING LOCATION:</b> See Figure No. 2	Water	▽	While Drilling	8.9 feet	▼	Upon Completion	8.9 feet	▽	Delay	N/A
Water	▽	While Drilling		8.9 feet								
	▼	Upon Completion		8.9 feet								
	▽	Delay	N/A									

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	STRENGTH, tsf	Additional Remarks
									X Moisture <span style="border: 1px solid black; padding: 0 2px;"> </span> PL <span style="border: 1px solid black; padding: 0 2px;"> </span> LL	▲ Qu    * Qp	
								0    25    50		0    2.0    4.0	
0				1		ASPHALT (1.25" Thick)	GP-GM	5-4-4-4 N=8			
				2		Brown LIMEROCK with Fine to Medium Grained Sand					
				3		Brown Fine to Medium Grained SAND (Pamlico Formation)	SP	4-3-4-4 N=7			
5				4		Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)	SP	5-4-2-3 N=6			
				5		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)		3-4-4-5 N=8			
				6			SP	5-5-3-3 N=8			
10								4-4-3-3 N=7			
						END OF BORING					



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**PROJECT NO.:** 0397-1546  
**PROJECT:** City of Hollywood Gravity Mains  
**LOCATION:** City of Hollywood  
 Broward County, Florida

<b>DATE STARTED:</b> 8/3/20 <b>DATE COMPLETED:</b> 8/3/20 <b>COMPLETION DEPTH:</b> 12.0 ft <b>BENCHMARK:</b> N/A <b>ELEVATION:</b> N/A <b>LATITUDE:</b> <b>LONGITUDE:</b> <b>STATION:</b> N/A <b>OFFSET:</b> N/A <b>REMARKS:</b>		<b>DRILL COMPANY:</b> PSI, Inc. <b>DRILLER:</b> LR <b>LOGGED BY:</b> AVL <b>DRILL RIG:</b> CME-55 <b>DRILLING METHOD:</b> Rotary Drilling <b>SAMPLING METHOD:</b> SS <b>HAMMER TYPE:</b> Automatic <b>EFFICIENCY:</b> N/A <b>REVIEWED BY:</b> JNG		<b>BORING B-06</b> <div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <b>Water</b>  <input type="checkbox"/> While Drilling  <input checked="" type="checkbox"/> Upon Completion  <input type="checkbox"/> Delay         </div> <div style="width: 15%; text-align: right;">           8.6 feet            8.6 feet            N/A         </div> </div> <b>BORING LOCATION:</b> See Figure No. 2	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @				Additional Remarks	
								X Moisture <input checked="" type="checkbox"/> PL <input checked="" type="checkbox"/> LL		STRENGTH, tsf ▲ Qu    * Qp				
								0                      25                      50		0                      2.0                      4.0				
0				1		ASPHALT (1.20" Thick)	GP-GM	7-3-3-2 N=5						
				2		Brown LIMEROCK with Fine to Medium Grained Sand								
				3		Brown Fine to Medium Grained SAND (Pamlico Formation)	SP	3-2-2-1 N=4						
5				4		Light Brown Weathered Oolitic LIMESTONE (Miami Formation)		2-2-3-2 N=5						
				5		Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)	SP	3-3-3-3 N=6						
				6		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	4-3-2-2 N=5						
10						END OF BORING		2-3-2-2 N=5						

	Professional Service Industries, Inc. 7950 N.W. 64th Street Miami, FL 33166 Telephone: (305) 471-7725	<b>PROJECT NO.:</b> 0397-1546 <b>PROJECT:</b> City of Hollywood Gravity Mains <b>LOCATION:</b> City of Hollywood Broward County, Florida
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<b>DATE STARTED:</b> 8/3/20 <b>DATE COMPLETED:</b> 8/3/20 <b>COMPLETION DEPTH:</b> 17.0 ft <b>BENCHMARK:</b> N/A <b>ELEVATION:</b> N/A <b>LATITUDE:</b> <b>LONGITUDE:</b> <b>STATION:</b> N/A <b>OFFSET:</b> N/A <b>REMARKS:</b>	<b>DRILL COMPANY:</b> PSI, Inc. <b>DRILLER:</b> LR <b>LOGGED BY:</b> AVL <b>DRILL RIG:</b> CME-55 <b>DRILLING METHOD:</b> Rotary Drilling <b>SAMPLING METHOD:</b> SS <b>HAMMER TYPE:</b> Automatic <b>EFFICIENCY:</b> N/A <b>REVIEWED BY:</b> JNG	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">BORING B-07</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="3" style="width: 5%; text-align: center; font-weight: bold;">Water</td> <td style="width: 10%; text-align: center;">▽</td> <td style="width: 65%;">While Drilling</td> <td style="width: 20%; text-align: right;">9.0 feet</td> </tr> <tr> <td style="text-align: center;">▼</td> <td>Upon Completion</td> <td style="text-align: right;">9.0 feet</td> </tr> <tr> <td style="text-align: center;">▽</td> <td>Delay</td> <td style="text-align: right;">N/A</td> </tr> </table> <b>BORING LOCATION:</b> See Figure No. 2	Water	▽	While Drilling	9.0 feet	▼	Upon Completion	9.0 feet	▽	Delay	N/A
Water	▽	While Drilling		9.0 feet								
	▼	Upon Completion		9.0 feet								
	▽	Delay	N/A									

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	STRENGTH, tsf	Additional Remarks
								X Moisture <span style="border: 1px solid black; padding: 0 2px;"> </span> PL <span style="border: 1px solid black; padding: 0 2px;"> </span> LL		▲ Qu    * Qp	
								0      25      50		0      2.0      4.0	
0						ASPHALT (1.90" Thick)	GP-GM				
				1		Brown LIMEROCK with Fine to Medium Grained Sand	SP	8-5-4-3 N=9			
				2		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	2-3-3-3 N=6			
5				3		Light Brown Fine to Medium Grained SAND with Limestone and Cemented Sand Fragments (Fort Thompson Formation)	SP	4-3-4-4 N=7			
				4		Light Brown Fine to Medium Grained SAND (Fort Thompson Formation)	SP	5-4-4-5 N=8			
10				5			SP	5-4-3-3 N=7			
				6			SP	2-5-4-3 N=9			
15				7			SP	3-3-4-3 N=7			
						END OF BORING					



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**PROJECT NO.:** 0397-1546  
**PROJECT:** City of Hollywood Gravity Mains  
**LOCATION:** City of Hollywood  
 Broward County, Florida



**TABLE 1: SUMMARY OF BORING LOCATIONS**  
**City of Hollywood Gravity Mains**  
**City of Hollywood**  
**Broward County, Florida**  
**PSI PROJECT No. 0397-1546**

BORING	LATITUDE	LONGITUDE	GROUND SURFACE ELEV. (ft)	BORING DEPTH (ft)	GROUNDWATER DEPTH (ft)	DATE PERFORMED
B-01	25.999570°	-80.199095°	N.A.	12	8.5	8/3/2020
B-02	26.001697°	-80.199174°	N.A.	14	9.0	8/3/2020
B-03	26.003562°	-80.199236°	N.A.	14	8.8	8/3/2020
B-04	26.005627°	-80.199313°	N.A.	15	9.0	8/3/2020
B-05	25.999712°	-80.202997°	N.A.	12	8.9	8/3/2020
B-06	26.001137°	-80.203051°	N.A.	12	8.6	8/3/2020
B-07	26.000423°	-80.206253°	N.A.	17	9.0	8/3/2020



**TABLE 2: SUMMARY OF LABORATORY TEST RESULTS**

**City of Hollywood Gravity Mains**

**City of Hollywood**

**Broward County, Florida**

**PSI PROJECT No. 0397-1546**

BORING	SAMPLE DEPTH INTERVAL (feet)	ORGANIC CONTENT (%)	MOISTURE CONTENT (%)	% PASS #200 SIEVE	USCS CLASS.
B-01	4' - 6'	0.36	12.78	2.67	SP
B-02	2' - 4'	0.39	2.48	2.23	SP
B-03	8' - 10'	0.56	16.85	7.28	SP
B-04	4' - 6'	0.29	16.58	4.39	SP
B-05	4' - 6'	0.33	9.60	8.69	SP
B-06	6' - 8'	0.48	11.87	6.80	SP
B-07	4' - 6'	0.43	8.74	6.33	SP

# KEY TO TERMS AND SYMBOLS USED ON LOGS

## ROCK CLASSIFICATION

### RECOVERY

DESCRIPTION OF RECOVERY	% CORE RECOVERY
Incompetent	< 40
Competent	40 TO 70
Fairly Continuous	70 TO 90
Continuous	90 TO 100

### ROCK QUALITY DESIGNATION (RQD)

DESCRIPTION OF ROCK QUALITY	RQD
Very Poor (VPo)	0 TO 25
Poor (Po)	25 TO 50
Fair (F)	50 TO 75
Good (Gd)	75 TO 90
Excellent (ExInt)	90 TO 100

## CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	N-VALUE (Blows/Foot)	SHEAR STRENGTH (tsf)	HAND PEN VALUE (tsf)
Very Soft	0 TO 2	0 TO 0.125	0 TO 0.25
Soft	2 TO 4	0.125 TO 0.25	0.25 TO 0.5
Firm	4 TO 8	0.25 TO 0.5	0.5 TO 1.0
Stiff	8 TO 15	0.5 TO 1.0	1.0 TO 2.0
Very Stiff	15 TO 30	1.0 TO 2.0	2.0 TO 4.0
Hard	>30	>2.0 OR 2.0+	>4.0 OR 4.0+

## SOIL DENSITY OR CONSISTENCY

DENSITY (GRANULAR)	CONSISTENCY (COHESIVE)	THD (BLOWS/FT)	FIELD IDENTIFICATION
Very Loose (VLo)	Very Soft (VSo)	0 TO 8	Core (height twice diameter) sags under own weight
Loose (Lo)	Soft (So)	8 TO 20	Core can be pinched or imprinted easily with finger
Slightly Compact (SICmpt)	Stiff (St)	20 TO 40	Core can be imprinted with considerable pressure
Compact (Cmpt)	Very Stiff (VSt)	40 TO 80	Core can only be imprinted slightly with fingers
Dense (De)	Hard (H)	80 TO 5"/100	Core cannot be imprinted with fingers but can be penetrated with pencil
Very Dense (VDe)	Very Hard (VH)	5"/100 to 0"/100	Core cannot be penetrated with pencil

## DEGREE OF PLASTICITY OF COHESIVE SOILS

DEGREE OF PLASTICITY	PLASTICITY INDEX (PI)	SWELL POTENTIAL
None or Slight	0 to 4	None
Low	4 to 20	Low
Medium	20 to 30	Medium
High	30 to 40	High
Very High	>40	Very High

## BEDROCK HARDNESS

MORHS' SCALE	CHARACTERISTICS	EXAMPLES	APPROXIMATE THD PEN TEST	
5.5 to 10	Rock will scratch knife	Sandstone, Chert, Schist, Granite, Gneiss, some Limestone	Very Hard (VH)	0" to 2"/100
3 to 5.5	Rock can be scratched with knife blade	Siltstone, Shale, Iron Deposits, most Limestone	Hard (H)	1" to 5"/100
1 to 3	Rock can be scratched with fingernail	Gypsum, Calcite, Evaporites, Chalk, some Shale	Soft (So)	4" to 6"/100

## MOISTURE CONDITION OF COHESIVE SOILS

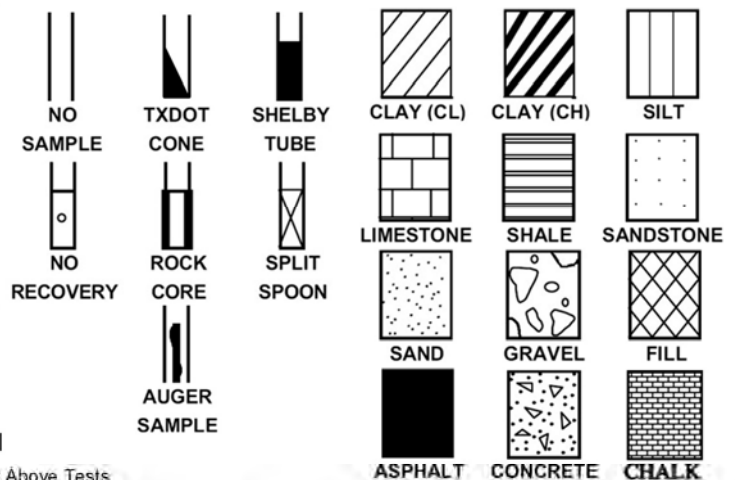
DESCRIPTION	CONDITION
Absence of moisture, dusty, dry to touch	DRY
Damp but no visible water	MOIST
Visible free water	WET

## RELATIVE DENSITY FOR GRANULAR SOILS

APPARENT DENSITY	SPT (BLOWS/FT)	CALIFORNIA SAMPLER (BLOWS/FT)	MODIFIED CA. SAMPLER (BLOWS/FT)	RELATIVE DENSITY (%)
Very Loose	0 to 4	0 to 5	0 to 4	0 to 15
Loose	4 to 10	5 to 15	5 to 12	15 to 35
Medium Dense	10 to 30	15 to 40	12 to 35	35 to 65
Dense	30 to 50	40 to 70	35 to 60	65 to 85
Very Dense	>50	>70	>60	85 to 100

## SAMPLER TYPES

## SOIL TYPES



## ABBREVIATIONS

PL – Plastic Limit  
LL – Liquid Limit  
WC – Percent Moisture  
Q<sub>P</sub> – Hand Penetrometer  
Q<sub>U</sub> – Unconfined Compression Test  
UU – Unconsolidated Undrained Triaxial

Note: Plot Indicates Shear Strength as Obtained By Above Tests

▽ WATER SEEPAGE

▽ WATER LEVEL AT END OF DRILLING

U.S. STANDARD SIEVE SIZE(S)

## CLASSIFICATION OF GRANULAR SOILS

6"		3"		3/4"		4		10		40		200			
BOULDERS	COBBLES	GRAVEL				SAND				SILT OR CLAY				CLAY	
		COARSE		FINE		COARSE		MEDIUM							FINE
		152	76.2	19.1	4.76	2.0	0.42	0.074							0.002

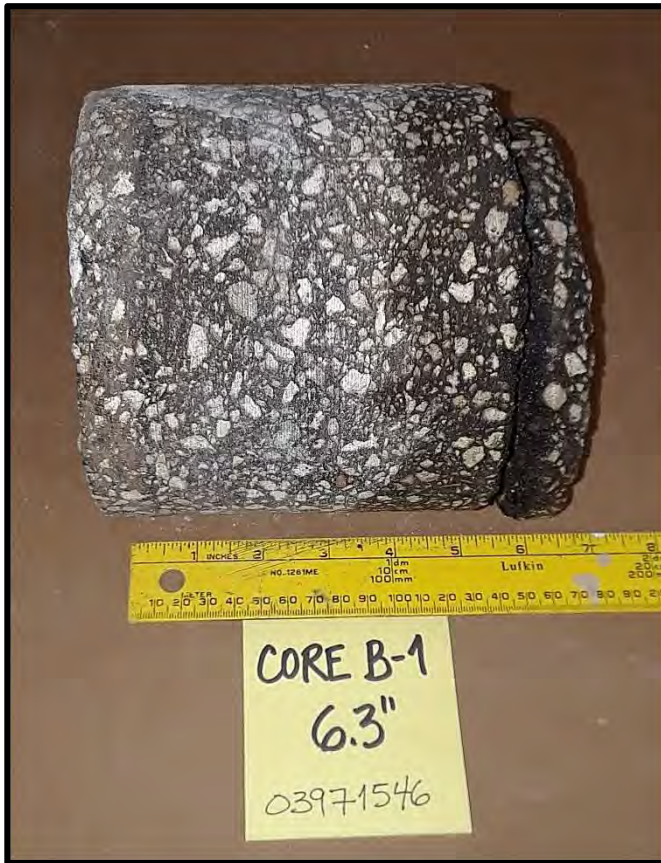




## **APPENDIX C**

## PAVEMENT CORE PHOTOGRAPHS

**CORE B-1**  
THICKNESS = 6.30"



**CORE B-2**  
THICKNESS = 3.00"



**CORE B-3**  
THICKNESS = 3.00"



PHOTOGRAPH No.: 1, 2, 3

DRAWN BY: AVL

CHECKED BY: JNG

GEOTECHNICAL ENGINEERING SERVICES  
City of Hollywood Gravity Mains  
City of Hollywood  
Broward County, Florida  
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## PAVEMENT CORE PHOTOGRAPHS

**CORE B-4**  
THICKNESS = 2.50"



**CORE B-5**  
THICKNESS = 1.25"



**CORE B-6**  
THICKNESS = 1.20"



**CORE B-7**  
THICKNESS = 1.90"



PHOTOGRAPH No.: 4, 5, 6, 7

DRAWN BY: AVL

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## PAVEMENT CORE PHOTOGRAPHS



PHOTOGRAPH No.: 8

DRAWN BY: AVL

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