

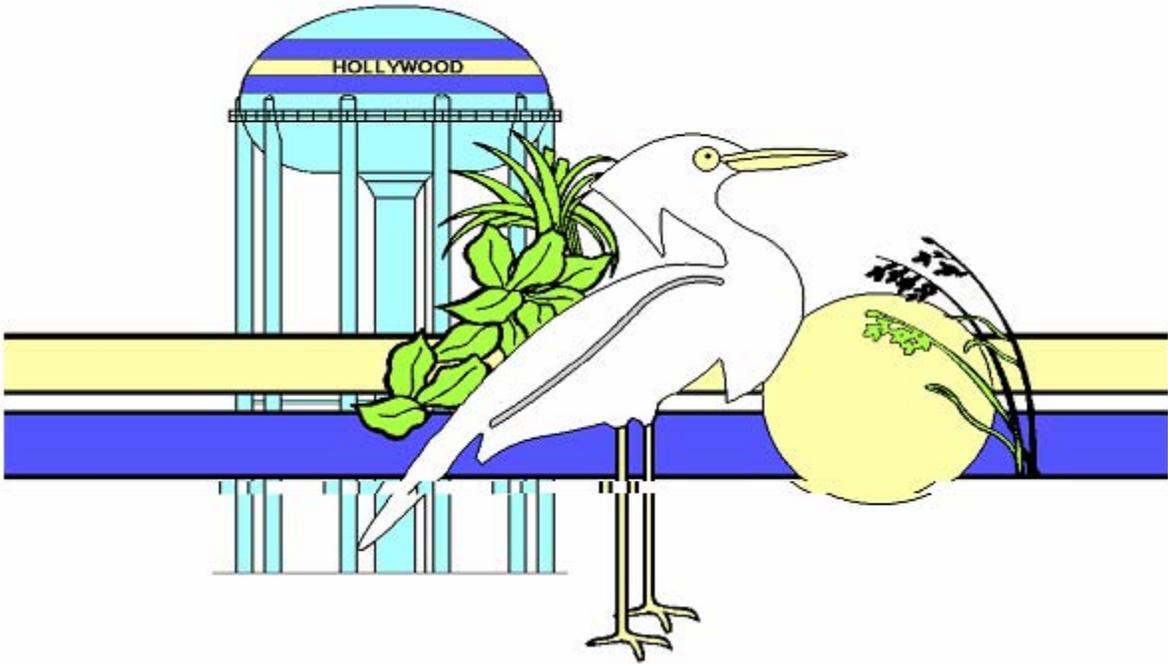
CITY OF HOLLYWOOD

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

Miscellaneous Drainage Improvements

May 2021



Prepared by:

ENGINEERING AND CONSTRUCTION SERVICES DIVISION

1621 N 14th Avenue
PO Box 229045
Hollywood, FL 33022-9045

CITY OF HOLLYWOOD

FLORIDA

CONTRACT DOCUMENTS

Miscellaneous Drainage Improvements

FOR

**CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES**

CITY PROJECT NO. 21-11047

MAY 2021

ENGINEERING AND CONSTRUCTION SERVICES DIVISION

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***CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES***

Miscellaneous Drainage Improvements

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BID PACKAGE
FOR
MISCELLANEOUS DRAINAGE IMPROVEMENTS
May 2021

PROJECT NO: 21-11047

SUBMITTED BY: The Stout Group, LLC

BID PACKAGE CONTENTS AND REQUIREMENTS

BID PACKAGE CONTENTS AND REQUIREMENTS

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SUBMIT THIS COMPLETE BID PACKAGE AND TWO COPIES



CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING AND CONSTRUCTION SERVICES DIVISION (ECSD)

SECTION 00030

NOTICE TO BIDDERS

PROJECT NAME: Miscellaneous Drainage Improvements

PROJECT NUMBER: 21-11047

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, **June 10, 2021**. **On June 10, 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. 14th Avenue, Building "A", Hollywood, Florida.

A mandatory pre-bid conference will be held on May 18, 2021 at 2:00 p.m., at the Southern Regional Wastewater Treatment Plant, located at 1621 N. 14th Avenue Hollywood, Florida 33021, First Floor Conference Room

The Bid Package and Contract documents can be downloaded at:

<http://www.hollywoodfl.org/Bids.aspx>. Request for technical assistance shall be submitted in writing no later than **May 25, 2021** to the Project Manager, Raul Wainer, P.E., rwainer@hollywoodfl.org.

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(F) 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.

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 11th Day of May, 2021

CITY OF HOLLYWOOD, FLORIDA

Clece Aurelus, P.E., Engineering Support Services Manager
Department of Public Utilities - ECSD

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 separate **BIDDING PACKAGE** consisting of the NOTICE TO BIDDERS, INSTRUCTION TO BIDDERS, CONE OF SILENCE, PROPOSAL, PROPOSAL BID FORM, APPROVED BID BOND, INFORMATION REQUIRED FROM BIDDERS AND LOCAL PREFERENCE shall be completed, signed and sealed as required and must be delivered in a sealed, opaque envelope, addressed to the City Clerk of Hollywood, Florida, by the time called for in the Notice to Bidders and shall be properly identified on the face thereof.

Proposals will be publicly opened and immediately read aloud at the time and place designated in the Notice to Bidders. No proposal will be considered which is not based upon these 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. 14th Avenue, Hollywood, Florida, 33020 on **May 18, 2021** 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.

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:

The Contract will be awarded only to a Bidder, who in the opinion of the Engineer, 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. Any one of the following causes, among others, may be considered as sufficient justification to disqualify a Bidder and reject his Bid:

- A. Submission of more than one Bid for the same work by an individual, firm, partnership or corporation under the same or different names.
- B. Evidence of collusion.
- C. Previous participation in collusive Bidding on work for the City of Hollywood, Florida.
- D. Submission of an unbalanced Bid in which the prices Bid for some items are out of proportion to the prices Bid for other items.
- E. Lack of competency. The 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.
- F. Lack of responsibility as shown by past work judged by the Engineer from the standpoint of workmanship and progress.
- G. Non-compliance with the City's Local Preference (when applicable).
- H. 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.
- I. 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 readvertised 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.

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:

Building Permits is not required for this project.

- END OF SECTION -

SECTION 00200



NOTICE OF IMPOSITION OF CONE OF SILENCE

On May 11, 2021 the City of Hollywood, Florida Department of Public Utilities issued the following:

Bid # 21-11047: MISCELLANEOUS DRAINAGE IMPROVEMENTS

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.

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

- END OF SECTION -

SECTION 00300

PROPOSAL

TO THE MAYOR AND COMMISSIONERS
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED June 10,2021 By The Stout Group, LLC

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 90 days with final completion within 120 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.

The BIDDER acknowledges receipt of the following addenda:

No. <u>1</u>	Dated <u>May 27,2021</u>
No. _____	Dated _____
No. _____	Dated _____

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

Ten percent of the amount Bid _____ Dollars (\$ 10%) 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:

The Stout Group, LLC

(Correct Name of Corporation)

By: Jose Maria Sanchez III

(SEAL)

Manager
(Official Title)

10850 NW 138 St, Hialeah Gardens, FL 33018
(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

The Stout Group, LLC
(Name of Corporation)

RESOLVED that Jose Maria Sanchez III
(Person Authorized to Sign)

Managing member of The Stout Group, LLC
(Title) (Name of Corporation)

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

CITY OF HOLLYWOOD
MISCELLANEOUS DRAINAGE IMPROVEMENTS
Project No.: 21-11047

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

The Stout Group, LLC at a meeting of its Board of
(Name of Corporation)

Directors held on the 10 day of June, 2021.

By: Jose Maria Sanchez III
Title: Manager

(SEAL)

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

- END OF SECTION -



Corporate Resolutions

RESOLUTION GRANTING SIGNING AND AUTHORITY TO CONDUCT BUSINESS

WHEREAS, the Corporation desires to grant signing and authority to certain person(s) described hereunder.

RESOLVED, that the Board of Members is hereby authorized and approved to grant signing and authority to conduct business to any one of the following person(s): **Yvette Zuluaga** and **Jose M. Sanchez III**. The foregoing signing and authority granted shall include, but shall not be limited to, the execution of Deeds, powers of attorney, transfers, assignments, contracts, obligations, certificates, and other instruments of whatever nature entered into by this Corporation.

The undersigned hereby certifies that he/she is the duly elected and qualified Manager and the custodian of the books and records and seal of **The Stout Group, LLC**, a corporation duly formed pursuant to the laws of the State of Florida and that the foregoing is a true record of a resolution duly adopted at a meeting of **The Stout Group, LLC** and that said meeting was held in accordance with state law and the Bylaws of the above-named Corporation on **May 18, 2012**, and that said resolution is now in full force and effect without modification or rescission.

IN WITNESS WHEREOF, I have executed my name as Manager and have hereunto affixed the corporate seal of the above-named Corporation this **10th day of June 2021**.

Corporate Seal:



Jose M. Sanchez, III
Manager
The Stout Group, LLC

Yvette Zuluaga
Member
The Stout Group, LLC

Ref: Bid # 21-11047: MISCELLANEOUS DRAINAGE IMPROVEMENTS

UNDERGROUND | SITEWORK | EARTHWORKS | PAVING

10850 NW 138th Street, Bay #3 - Hialeah Gardens, FL 33018 - O: 786.452.1481 - F: 305.397.2311

State of Florida

Department of State

I certify from the records of this office that THE STOUT GROUP, LLC is a limited liability company organized under the laws of the State of Florida, filed on May 23, 2012, effective May 18, 2012.

The document number of this limited liability company is L12000069574.

I further certify that said limited liability company has paid all fees due this office through December 31, 2021, that its most recent annual report was filed on January 11, 2021, and that its status is active.

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



Randy R. ...
Secretary of State

Tracking Number: 7622031694CC

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

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

SECTION 00301

**CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION DIVISION**

PROPOSAL BID FORM

Project Scope: The work to be performed consists of Miscellaneous Drainage Improvements.

Project No.: 21-11047

NOTES:

1. SUBSTANTIAL COMPLETION TIME AND PROJECT CLOSEOUT TIME FOR THE CONTRACT SHALL BE AS DEFINED IN THE PROJECT SCHEDULE IN THE SUPPLEMENTARY GENERAL CONDITIONS
2. QUANTITIES PROVIDED ARE FOR INFORMATION PURPOSES. FULL DESCRIPTION OF THE PAY ITEMS ARE PROVIDED IN SECTION 01025 "BASIS OF PAYMENT". REFER TO BID PACKAGE SPECIFICATIONS FOR ADDITIONAL DESCRIPTIONS OF ITEMS.
3. ALL ITEMS REFER TO THE ATTACHED DRAINAGE PLANS.
4. THE CITY OF HOLLYWOOD REQUIRES THE CONTRACTOR TO PROVIDE THE UNIT PRICE/TOTAL IN TEXT AS WELL AS NUMERICAL FORMAT FOR EACH LINE ITEM LISTED IN THE PROPOSAL BID FORMS. FAILURE TO PROVIDE UNIT PRICE/TOTAL FOR EACH LINE ITEM IN TEXT AS WELL AS NUMERICAL FORMAT MAY RENDER THE ENTIRE BID PACKAGE NON-RESPONSIVE.
5. THE CITY OF HOLLYWOOD WILL EVALUATE THE BID PROPOSALS AND DETERMINE THE LOWEST, RESPONSIVE, RESPONSIBLE BIDDER FOR THE TOTAL BASE BID (ITEMS 1 THROUGH 21). IT IS THE CITY OF HOLLYWOOD'S INTENT TO AWARD THE PROJECT BASED UPON THE TOTAL BASE BID. HOWEVER, THE CITY MAY DECIDE TO INCLUDE THE ALTERNATE UNIT PRICE BID ITEMS FOR THE CALCULATION OF THE TOTAL BASE BID.

- END OF SECTION -

SECTION 00301

CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION DIVISION

PROPOSAL BID FORM

Project Scope: The work to be performed consists of Miscellaneous Drainage Improvements.

Project No.: 21-11047

Item No.	Description	Qty.	Unit	Unit Price	Total
1	Mobilization including Bonds for the lump sum price of (shall not exceed 3% of Bid Item Nos.2-17): <u>Fifteen thousand</u> _____ Dollars and _____ Cents	1	LS	\$ <u>15,000⁰⁰</u>	\$ <u>15,000⁰⁰</u>
2	Maintenance of Traffic (MOT): <u>Four thousand</u> _____ Dollars and _____ Cents	1	LS	\$ <u>4,000⁰⁰</u>	\$ <u>4,000⁰⁰</u>
3	Furnish and Install 24"x37" Catch Basin Structures <u>Four thousand</u> _____ Dollars and _____ Cents	18	EA	\$ <u>4,000⁰⁰</u>	\$ <u>72,000⁰⁰</u>
4	Furnish and Install 36"x36" Manhole Structures with correspondent Baffles, Frame and Grate <u>Four thousand five hundred</u> _____ Dollars and _____ Cents	10	EA	\$ <u>4,500⁰⁰</u>	\$ <u>45,000⁰⁰</u>
5	Furnish and Install PVC A-2000 15" Diam. Solid Pipe: <u>Sixty five</u> _____ Dollars and _____ Cents	500	LF	\$ <u>65⁰⁰</u>	\$ <u>32,500⁰⁰</u>
6	Furnish and Install PVC A-2000 18" Diam. Solid Pipe: <u>seventy</u> _____ Dollars and _____ Cents	1,200	LF	\$ <u>70⁰⁰</u>	\$ <u>84,000⁰⁰</u>

SECTION 00301

CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION DIVISION

PROPOSAL BID FORM

Project Scope: The work to be performed consists of Miscellaneous Drainage Improvements.

Project No.: 21-11047

<i>Item No.</i>	<i>Description</i>	<i>Qty.</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Total</i>
7	Furnish and Install PVC A-2000 24" Diam. Solid Pipe: <u>Ninety</u> _____ Dollars and _____ Cents	200	LF	\$ <u>90⁰⁰</u>	\$ <u>18,000⁰⁰</u>
8	Furnish and Install PVC A-2000 30" Diam. Solid Pipe: <u>ONE hundred and twenty</u> _____ Dollars and _____ Cents	200	LF	\$ <u>120⁰⁰</u>	\$ <u>24,000⁰⁰</u>
9	Furnish and Install PVC A-2000 18" Diam. French Drain: <u>ONE hundred and twenty five</u> _____ Dollars and _____ Cents	600	LF	\$ <u>125⁰⁰</u>	\$ <u>75,000⁰⁰</u>
10	Replace PVC A-2000 15" Diam. Pipe and Connect to the Existing Structures <u>Ninety</u> _____ Dollars and _____ Cents	550	LF	\$ <u>90⁰⁰</u>	\$ <u>49,500⁰⁰</u>
11	Replace Existing 36" Diam. Drainage Structure. Connect to Two (2) Existing 30" Diam. Pipes: <u>Nine thousand five hundred</u> _____ Dollars and _____ Cents	1	EA	\$ <u>9500⁰⁰</u>	\$ <u>9500⁰⁰</u>
12	Replace Existing 36" x 36" Drainage Structure. Connect to Two(2) Existing Connect to 2 Existing 30" Diam. RCP: <u>Nine thousand five hundred</u> _____ Dollars and _____ Cents	1	EA	\$ <u>9500⁰⁰</u>	\$ <u>9500⁰⁰</u>

SECTION 00301

CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION DIVISION

PROPOSAL BID FORM

Project Scope: The work to be performed consists of Miscellaneous Drainage Improvements.

Project No.: 21-11047

Item No.	Description	Qty.	Unit	Unit Price	Total
13	Disconnect and Plug Existing Structure : <u>ONE thousand five hundred</u> Dollars and _____ Cents	1	EA	\$ <u>1500.00</u>	\$ <u>1500.00</u>
14	Regrade Swale _____ Dollars and <u>seventy five</u> Cents	10,000	SF	\$ <u>0.75</u>	\$ <u>7500.00</u>
15	Milling and Resurfacing (includes regrading with first 1" and second 1" lift): <u>sixteen</u> Dollars and <u>fifty</u> Cents	4,800	SY	\$ <u>16.50</u>	\$ <u>79200.00</u>
16	Pavement Overlay (includes regrading with first 1"): <u>six</u> Dollars and <u>seventy five</u> Cents	2,000	SY	\$ <u>6.75</u>	\$ <u>13500.00</u>
17	Pavement Markings, Traffic Signs, and Reflective Pavement Markers: <u>five thousand</u> Dollars and _____ Cents	1	LS	\$ <u>5000.00</u>	\$ <u>5000.00</u>
18	Undefined Conditions Allowance	1	LS	\$500,000.00	\$500,000.00
19	Permit, Licenses, Tests, Fee Allowance.	1	LS	\$30,000.00	\$30,000.00
20	Consideration for indemnification.	1	LS	\$10.00	\$10.00
21	Demobilization for the lump sum price of (shall not be less than 2% of Bid Item Nos.2-17): <u>ten thousand</u> Dollars and _____ Cents	1	LS	\$ <u>10000.00</u>	\$ <u>10000.00</u>

BASE BID TOTAL FOR COMPLETE PROJECT

\$ 1,084,710.00

SECTION 00301

CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION DIVISION

PROPOSAL BID FORM

Project Scope: The work to be performed consists of Miscellaneous Drainage Improvements.

Project No.: 21-11047

TOTAL BASE BID IN WRITING

one million eighty four thousand
seven hundred and ten dollars ⁰⁰/₁₀₀

Company/Contractor Name:

The Stout Group, LLC

FURNISH AND INSTALL ALTERNATE UNIT PRICE BID ITEMS:

Item No.	Description	Qty.	Unit	Unit Price	Total
A	CB 30x37	10	EA	\$ 4000.00	\$ 40,000.00
B	CB 36x36	10	EA	\$ 4500.00	\$ 45,000.00
C	MH 30x30	10	EA	\$ 4000.00	\$ 40,000.00
D	SP 24"	100	LF	\$ 90.00	\$ 9,000.00
E	FD 24"	100	LF	\$ 165.00	\$ 16,500.00
F	Sidewalk	10	SY	\$ 100.00	\$ 1,000.00
G	Connect ex. 12" to 18" Dia. pipe to structure	10	EA	\$ 2500.00	\$ 25,000.00
H	Connect ex. 24" to 30" Dia. pipe to structure	10	EA	\$ 3000.00	\$ 30,000.00
I	Pavement Resurfacing (1" Asphalt Overlay)	10	SY	\$ 12.00	\$ 120.00
J	Milling and Resurfacing 1"	10	SY	\$ 18.00	\$ 180.00
K	10" Limerock Base	10	SY	\$ 50.00	\$ 500.00
L	12" Stabilized Subgrade	10	SY	\$ 20.00	\$ 200.00
M	Furnish and Install swale	1200	SF	\$ 2.00	\$ 2400.00
N	Disconnect and Plug Existing 12 to 18" Diam. Structure	2	EA	\$ 3000.00	\$ 6000.00
O	Disconnect and Plug Existing 24" to 30" Diam. Structure	2	EA	\$ 4000.00	\$ 8000.00
P	CCTV 12" to 30" Diam Drainage Line	100	LF	\$ 20.00	\$ 2000.00
Q	Replace PVC A-2000 24" Diam. Pipe	100	LF	\$ 250.00	\$ 25000.00
R	Concrete Apron (refer to drainage detail)	100	EA	\$ 3000.00	\$ 300,000.00

SECTION 00410

APPROVED BID BOND

(Construction)

STATE OF FLORIDA

KNOW ALL MEN BY THESE PRESENTS:

That we The Stout Group, LLC, as Principal, and Hartford Casualty Insurance Company, as

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

Ten Percent of the Amount Bid Dollars (\$ 10%) lawful money

of the United States, amounting to 10% of the total Bid 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 bid, dated June 9 20_21 for

Miscellaneous Drainage Improvements –Project No. 21-11047

NOW, THEREFORE, if the principal shall not withdraw said bid 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 bid 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 Bid Bond

In the event of the withdrawal of said bid 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 bid 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 bid.

IN WITNESS WHEREOF, the above bound parties have executed this statement under their several seals this _____ 9th _____ day of _____ June _____, 20 21, 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

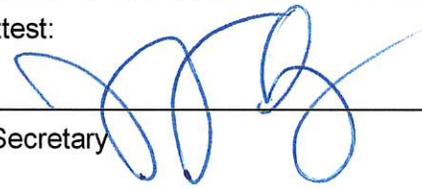
Printed Name of Individual

Witness

Address

WHEN THE PRINCIPAL IS A CORPORATION:

Attest:



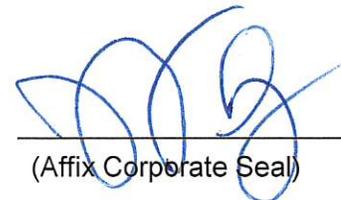
Secretary

The Stout Group, LLC

Name of Corporation

10850 N.W. 138th Street Bay #3

Business Address
Miami, FL 33018

By: 

(Affix Corporate Seal)

Jose Maria Sanchez III

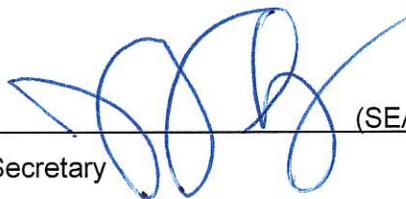
Printed Name

Manager

Official Title

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, Jose Maria Sanchez III, certify that I am the secretary of the Corporation named as Principal in the attached bond; that Jose Maria Sanchez III who signed the said bond on behalf of the Principal, was then Secretary / Manager of said Corporation; that I know his signature, and his signature thereto is genuine and that said bond was duly signed, sealed and attested for and on behalf of said Corporation by authority of its governing body.



Secretary (SEAL)

TO BE EXECUTED BY CORPORATE SURETY:

Attest:

See Power of Attorney
Secretary

Hartford Casualty Insurance Company
Corporate Surety
One Hartford Plaza
Business Address
Hartford, CT 06155
BY: [Signature]
(Affix Corporate Seal)
Kevin Wojtowicz
Attorney-in-Fact
Nielson, Wojtowicz, Neu & Associates
Name of Local Agency
1000 Central Ave. Ste 200
Business Address
St. Petersburg FL 33705

STATE OF FLORIDA

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared, Kevin Wojtowicz to me well known, who being by me first duly sworn upon oath says that he is the attorney-in-fact for the Hartford Casualty Insurance Company and that the has been authorized by Hartford Casualty 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 9th day of June, 2021

[Signature]
Notary Public, State of Florida

My Commission Expires:



- END OF SECTION -

POWER OF ATTORNEY

Direct Inquiries/Claims to:
THE HARTFORD
BOND, T-12
One Hartford Plaza
Hartford, Connecticut 06155
Bond.Claims@thehartford.com
call: 888-266-3488 or fax: 860-757-5835

KNOW ALL PERSONS BY THESE PRESENTS THAT:

Agency Name: NIELSON HOOVER & COMPANY INC
Agency Code: 21-229752

- Hartford Fire Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- Hartford Casualty Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- Hartford Accident and Indemnity Company**, a corporation duly organized under the laws of the State of Connecticut
- Hartford Underwriters Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- Twin City Fire Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- Hartford Insurance Company of Illinois**, a corporation duly organized under the laws of the State of Illinois
- Hartford Insurance Company of the Midwest**, a corporation duly organized under the laws of the State of Indiana
- Hartford Insurance Company of the Southeast**, a corporation duly organized under the laws of the State of Florida

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, **up to the amount of Unlimited** :

D. A. Belis, Tracey C. Brown-Boone, Natalie C. Demers, David R. Hoover, Stephanie McCarthy, Laura D. Mosholder, John R. Neu, Charles D. Nielson, Charles J. Nielson, Joseph Penichet Nielson, Daniel Frank Oaks, Brett Rosenhaus, Kevin Wojtowicz of MIAMI LAKES, Florida

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by , and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on May 6, 2015 the Companies have caused these presents to be signed by its Senior Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.



John Gray, Assistant Secretary

M. Ross Fisher, Senior Vice President

STATE OF CONNECTICUT }
COUNTY OF HARTFORD } ss. Hartford

On this 5th day of January, 2018, before me personally came M. Ross Fisher, to me known, who being by me duly sworn, did depose and say: that he resides in the County of Hartford, State of Connecticut; that he is the Senior Vice President of the Companies, the corporations described in and which executed the above instrument; that he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that he signed his name thereto by like authority.



CERTIFICATE

Kathleen T. Maynard
Notary Public
My Commission Expires July 31, 2021

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of June 9, 2021
Signed and sealed at the City of Hartford.



Kevin Heckman, Assistant Vice President

SECTION 00420

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: The Stout Group, LLC

2. Contractor's Telephone Number: 786-452-1481
and e-mail address: jsanchez@thestoutgroup.com
3. Contractor's License (attach copy): CGC 1507974 / CUC 1224022
Primary Classification: General Contractor & Underground Contractor
Broward County License Number (attach copy): _____
4. Number of years as a Contractor in construction work of the type involved in this
Contract: 9 years

5. List the names and titles of all officers of Contractor's firm:
Yvette Zuluaga - Member
Jose Maria Sanchez III - Managing Member

6. Name of person who inspected site or proposed work for your firm:
Name: Jose Maria Sanchez III
Date of Inspection: May 26,2021
7. What is the last project of this nature you have completed?
Please see attached our Experience

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

None

9. Name three (3) individuals or corporations for which you have performed work and to which you refer:

Please see attached

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
-----------------	------	----------------------	-------------------------------	----------------------

Please see attached

(Continue list on inset sheet, if necessary)

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

Please see attached

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

None

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.

JOSE M. SANCHEZ III, P.E.

Jose M Sanchez III, better known as Joey, since young age started working at his father's company Horizon Contractors, Inc. His hard work has allowed him to promote his way up from the unofficial ranks of unskilled laborer, skilled laborer, heavy equipment operator, surveyor's rod man, surveyor party chief, foreman and superintendent. He has performed every field job within the Engineering Contracting genre.

From 2000 to 2012, he worked his way up from the official positions of Assistant Project Manager, Project Manager, Project Engineer and Vice President. During this time, not only did he move up the ranks within his father's company, but he also completed his curriculum in FIU and graduated with a Bachelor of Science in Civil Engineering (2003).

Once Joey received his degree from FIU, he did not stop there. He then obtained the following licensures:

- Florida Professional Engineering License (PE)
- Florida Certified General Contractor License (CGC)
- Florida Certified Underground Contractors License (CUC)
- Florida Certified Home Inspector License
- Miami Dade County Engineering Contractors License
- Broward County Engineering Contractors License.

Along with these licensures, Joey has obtained many State Contracting Certifications allowing him to perform various specialized scopes within state projects.

In the Spring of 2012, The Stout Group was created. Joey has been the Managing Member/ Chief Estimator/Sr. Project Manager. Joey has a vast knowledge of all aspects of underground and highway projects.

EXPERTISE

Over 25 years of experience in the following types of projects:

- | | |
|--------------------------------|-----------------------------------|
| ▪ Water/Sewer Installation | ▪ Drainage Installation |
| ▪ Watermain Installation | ▪ Bridge Deck and Pilling Install |
| ▪ Force Main/ Pump Stations | ▪ Structural Work |
| ▪ Highway Construction | ▪ Asphalt and Concrete Paving |
| ▪ Street Lighting Construction | ▪ Signalization Construction |

Joey has worked on many of projects from beginning to end.
Please see attached a list of other sample projects relative to this bid.



Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAUT, P.E.
SECRETARY

May 28, 2021

THE STOUT GROUP LLC
10850 NW 138TH STREET
MIAMI, FLORIDA 33018

RE: CERTIFICATE OF QUALIFICATION

Dear Sir/Madam:

The Department of Transportation has qualified your company for the type of work indicated below. Unless your company is notified otherwise, this Certificate of Qualification will expire 6/30/2022. However, the new application is due 4/30/2022.

In accordance with S.337.14 (1) F.S. your next application must be filed within (4) months of the ending date of the applicant's audited annual financial statements.

If your company's maximum capacity has been revised, you can access it by logging into the Contractor Prequalification Application System via the following link:
<HTTPS://fdotwpl.dot.state.fl.us/ContractorPreQualification/>

Once logged in, select "View" for the most recently approved application, and then click the "Manage" and "Application Summary" tabs.

FDOT APPROVED WORK CLASSES:

DRAINAGE, FLEXIBLE PAVING, GRADING, HOT PLANT-MIXED BITUM. COURSES, PAVEMENT MARKING, ROADWAY SIGNING, SIDEWALK, LIFT STATION, UNDERGROUND UTILITIES - WATER AND SEWER

You may apply for a Revised Certificate of Qualification at any time prior to the expiration date of this certificate according to Section 14-22.0041(3), Florida Administrative Code (F.A.C.), by accessing your most recently approved application as shown above and choosing "Update" instead of "View." If certification in additional classes of work is desired, documentation is needed to show that your company has done such work with your own forces and equipment or that experience was gained with another contractor and that you have the necessary equipment for each additional class of work requested.

All prequalified contractors are required by Section 14-22.006(3), F.A.C., to certify their work underway monthly in order to adjust maximum bidding capacity to available bidding capacity. You can find the link to this report at the website shown above.

Sincerely,

Darlene Anderson, for

Alan Autry, Manager
Contracts Administration Office

AA:cg



Ron DeSantis, Governor

Halsey Beshears, 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

SANCHEZ, JOSE MARIA III

THE STOUT GROUP, LLC
10850 NW 138TH STREET
BAY #3
HIALEAH GARDENS FL 33018

LICENSE NUMBER: CUC1224022

EXPIRATION DATE: AUGUST 31, 2022

Always verify licenses online at 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

Halsey Beshears, 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

SANCHEZ, JOSE MARIA III

THE STOUT GROUP, LLC
10850 NW 138TH STREET
BAY #3
HIALEAH GARDENS FL 33018

LICENSE NUMBER: CGC1507974

EXPIRATION DATE: AUGUST 31, 2022

Always verify licenses online at MyFloridaLicense.com



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



Ron DeSantis, Governor



STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

SANCHEZ, JOSE MARIA III

10850 NW 138 STREET
BAY #3
HIALEAH GARDENS FL 33018

LICENSE NUMBER: PE67764

EXPIRATION DATE: FEBRUARY 28, 2023

Always verify licenses online at MyFloridaLicense.com



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THE STOUT GROUP, LLC.

Experience

To Whom It May Concern,

Please find below (7) completed projects and (4) ongoing project within the last five (5) years, in which The Stout Group, LLC with Jose Maria Sanchez III (Joey)) as the Project Manager, provided Florida cities, counties or other Florida governmental agencies similar services to that of the aforementioned bid.

A. COMPLETED PROJECTS

1. City of Hollywood – Project No 19-11044 – City-Wide Miscellaneous Drainage Improvements

- a. Owner Name: City of Hollywood – Public Utilities.
Contact Name: Raul Wainer - Project Manager
Telephone Number: 954-921-3930
Email Address: Rwainer@hollywoodfl.org
Project Address: City of Hollywood

- b. Narrative:
On the aforementioned project, The Stout Group, LLC is performing various scopes within the project limits of City of Hollywood. The scopes included Drainage, roadway restoration, concrete curb and gutter, concrete sidewalks, landscaping, regrade swale, milling and resurfacing,

- c. Contract Amount : \$ 730,737.00
- d. Expected final acceptance 05-03-2021

2. Florida Department of Transportation - T4534 - Rock Island Rd

- a. Owner Name: Florida Department of Transportation
Contact Name: Alejandro Pina - S.E.T Project Administrator
Telephone Number: 954-958-7629
Email Address: Alejandro.pina@dot.state.fl.us
Project Address: Rock Island Rd, Coral Springs

- b. Narrative:
On the aforementioned project, The Stout Group, LLC is performing various scopes within the project limits of Rock island Rd. The scopes included roadway widening, concrete curb and gutter, concrete sidewalks, landscaping, milling and resurfacing, and striping.

- c. Contract Amount : \$ 1,247,199
- d. Expected final acceptance 03-19-2021

UNDERGROUND | SITEWORK | EARTHWORKS | PAVING

10850 NW 138th Street, Bay #3 - Hialeah Gardens, FL 33018 - O: 786.452.1481 - F: 305.397.2311



THE STOUT GROUP, LLC.

3. Florida Department of Transportation- T6450 - Campbell Dr - Horizon Contractors, Inc.
Florida Department of Transportation - Prime: Horizon Contractors, Inc
 - a. Owner Name: Bernon Artola - Project Administrator
Contact Name:
Telephone Number: 786-367-4674
Email Address: bartola@cgasolutions.com
Project Address: SW 336 St/ Davis Pkwy/ US-1 / Campbell Dr.
 - b. Narrative:
On the aforementioned project, The Stout Group, LLC performed various scopes within the project limits of Campbell Drive. The scopes self-performed included the removal and replacement of a live lift station, removal and replacement of a live sanitary sewer and the installation of drainage.
 - c. Contract Amount : \$ 16.3 Millions
 - d. Completion Date: 03, 2021

4. Florida Department of Transportation- T4509 - Hollywood Blvd
 - a. Owner Name: Florida Department of Transportation - Prime: The Stout Group, LLC
Contact Name: Mackendy (Mack) Philippi - Construction Project Administrator II
Telephone Number: (954) 958-7693
Email Address: Mackendy.philippi@dot.state.fl.us
Project Address: City of Hollywood - Broward County
 - b. Narrative:
On the aforementioned project, The Stout Group, LLC self-performed various scopes of work including drainage and water main installation along the project corridor ,roadway restoration, concrete curb and gutter, concrete sidewalks, regrade swale, milling and resurfacing and striping.
 - c. Contract Amount: \$3,049,774.59
 - d. Completion Date: December 03, 2020

UNDERGROUND | SITEWORK | EARTHWORKS | PAVING

10850 NW 138th Street, Bay #3 - Hialeah Gardens, FL 33018 - O: 786.452.1481 - F: 305.397.2311



THE STOUT GROUP, LLC.

5. Florida Department of Transportation - T6401-Biscayne Blvd Roadway Improvements

- a. Owner Name: Florida Department of Transportation - Prime : The Stout Group, LLC
- Contact Name: Jonathan Fundora. - Construction Senior Project Manager
- Telephone Number: 305-962-3653
- Email Address: Jonathan.fundora@dot.state.fl.us
- Project Address: SR 5SR 5 (SE 2nd Ave.) and SR 5 (US 1/Biscayne Blvd.)

b. Narrative:

On the aforementioned project, The Stout Group, LLC performed various scopes within the project limits of Biscayne Blvd. The scopes self performed included were major drainage upgrades along the project corridor, water main upgrades, and sewer main upgrades. The sewer main upgrades included bypassing sewer mains. Full reconstruction of the roadway, concrete curb and gutter, concrete sidewalks, paver sidewalks, lighting upgrades, full intersection signalization installation, pedestrian signalization upgrades, milling and resurfacing, striping, and guardrail installation.

- c. Contract Amount: \$5.7 Million
- d. Completion Date: May 03, 2019

6. Florida Department of Transportation - T6391 - LeJeune Rd & Alhambra Circle

- a. Owner Name: Florida Department of Transportation - Prime : The Stout Group, LLC
- Contact Name: Jonathan FFundora. - Construction Senior Project Manager
- Telephone Number: 305-962-3653
- Email Address: Jonathan.fundora@dot.state.fl.us
- Project Address: SR 953 (LeJeune Rd./SW 42nd Ave.)

b. Narrative:

On the aforementioned project, The Stout Group, LLC performed various scopes within the project limits. The scopes performed were drainage upgrades, roadway widening, concrete curb and gutter, concrete sidewalks, lighting upgrades, full intersection signalization installation, pedestrian signalization upgrades, Landscaping, Irrigation, ADA upgrades, milling and resurfacing, and striping.

- c. Contract Amount \$ 1.1 Million
- d. Completion Date : May 21, 2017

UNDERGROUND | SITEWORK | EARTHWORKS | PAVING

10850 NW 138th Street, Bay #3 - Hialeah Gardens, FL 33018 - O: 786.452.1481 - F: 305.397.2311



THE STOUT GROUP, LLC.

7. Miami Dade County – 20150217 – Drainage Improvements Project Multiple Sites

- e. Contact Person: Felipe Monteagudo
Telephone Number: 305-323-8192
Email Address: felipe.monteagudo@miamidade.gov
- f. On the aforementioned project, The Stout Group, LLC performed various scopes within the project limits. The scopes performed were major drainage upgrades, roadway restoration, concrete curb and gutter restoration, concrete sidewalks restoration, milling and resurfacing and striping.
- g. The Contract Duration was 480 Calendar Days
- h. The Total Dollar Amount of the contract was \$1.5 Million

B. OTHER SAMPLE PROJECTS

Please see attached a list of other sample projects relative to this bid.

If further information is needed, please do not hesitate in contacting us.

Sincerely,
The Stout Group, LLC
Joey Sanchez, P.E.
Manager

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THE STOUT GROUP, LLC.

ONGOING Contracts

To Whom It May Concern:

Please find below (4) contracts in which The Stout Group, LLC is working:

1. Florida Department of Transportation – E6L97- District-wide Drainage Push Button Contract

Contact Person: Lazaro Mesa
Telephone Number: 305-401-1438
Email Address: lazaro.mesa@dot.state.fl.us
Contract amount: \$1,000,000.00
Completion Date August 08, 2022

2. Florida Keys Aqueduct Authority Project No 2356-20 - Burton Dr.- US-1 Dist System Upgrade WM Realignment

Contact Person: Keith McMahon
Telephone Number: 305-783-8513
Email Address: kmcmahon@fkaa.com
Contract amount: \$517,006.60
Completion Date March 30-2021

3. Parks, Recreation and Open Spaces - Capital Program Division- RPQ NO: 422003-17-003- Rickenbacker Causeway Green Bikes Lanes Segment A - Phase I

Contact Person: Lin Li
Telephone Number: 305-755-5464
Email Address: Lin.Li@miamidade.gov
Contract amount: \$ 2,138,892.50
Completion Date: August 13, 2021

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THE STOUT GROUP, LLC.

4. Department of transportation and Public Works - Capital Improvements RPQ No. 20200304 (MCC 7360 Plan) - Drainage Improvements C-100 Canal Outfalls Retrofit between SW 98 Ave. and SW 106 Ct.

Contact Person: Jose Gutierrez
Telephone Number: 305-375-2930
Email Address: Jose.Gutierrez2@miamidade.gov
Contract amount: \$ 785,355.74
Completion Date: Feb 04, 2022

If further information is needed, please do not hesitate in contacting us.

Sincerely,
The Stout Group, LLC
Joey Sanchez, P.E.
Manager

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Sample Projects (Completed)

Project Number: 001

Project Name: I-595 to Turnpike Northbound Ramp – T7 Ramp
 Owner: Florida Department of Transportation

Contractor: Maytin Engineering Corp.
 Contact: Roly Maytin, PE
 Address: 13900 NW 112th Ave
 Hialeah Gardens, FL 33018
 Phone: 305-827-4545
 Fax: 305-827-4547

Completed: March 2014

Contract Amount: \$495,000

Contract Scope:

- Excavation 3500 CY
- Embankment 18,000 CY
- Limerock (Finish Grade) 12,000 SY
- Solid Pipe (Various Diameters) 750 LF
- Drainage Structure 10 EA
- Asphalt
 - Traffic Level D (PG 76-22) 420 TN
 - FC-9.5 80 TN

Project Number: 002

Project Name: Phase VI – Storm Water Improvements
 Owner: Village of El Portal

Contractor: Horizon Contractors, Inc.
 Contact: Xavier Salvat, PE
 Address: 8175 West 32nd Ave – Suite 2
 Hialeah, FL 33018
 Phone: 305-828-2050
 Fax: 305-820-0905

Completed: April 2014

Contract Amount: \$35,000

Contract Scope:

- Solid Pipe (Various Diameters) 190 LF
 - Drainage Structure 2 EA
 - Asphalt
 - Traffic Level C 40 TN
-

Project Number: 003

Project Name: T6207 - SR-5 – Overseas Highway (MM 93 – 97)
Owner: Village of El Portal

Contractor: Horizon Contractors, Inc.
Contact: Xavier Salvat, PE
Address: 8175 West 32nd Ave – Suite 2
Hialeah, FL 33018
Phone: 305-828-2050
Fax: 305-820-0905

Completed: May 2014
Contract Amount: \$29,000
Contract Scope:

- Finish Grade 17,695 SY

Project Number: 004

Project Name: E6H34 - SR-5 – Overseas Highway (MM 85 – 84)
Owner: Florida Department of Transportation

Contractor: Horizon Contractors, Inc.
Contact: Xavier Salvat, PE
Address: 8175 West 32nd Ave – Suite 2
Hialeah, FL 33018
Phone: 305-828-2050
Fax: 305-820-0905

Completed: March 2015
Contract Amount: \$650,000
Contract Scope:

- Solid Pipe (Various Diameters) 1900 LF
- French Drain 24" 680 LF
- Drainage Structures 18 EA

Project Number: 005

Project Name: The Bond – Duct Bank
Owner: 1080 Brickell Development

Contractor: ION Electric, LLC
Contact: Jack Higgins
Address: 2001 N. Andrews Avenue
Pompano Beach, FL 33069
Phone: 954-434-7432
Fax: 954-857-6687

Completed: August 2014
Contract Amount: \$20,000
Contract Scope:

- 6" 15 Way Primary Duct Bank 120 LF

Project Number: 006

Project Name: T6314 – Marathon Key - SR-5 – Overseas Highway (MM 47 – 48)

Owner: Florida Department of Transportation

Contractor: Horizon Contractors, Inc.

Contact: Xavier Salvat, PE

Address: 8175 West 32nd Ave – Suite 2
Hialeah, FL 33018

Phone: 305-828-2050

Fax: 305-820-0905

Completed: February 2015

Contract Amount: \$377,000

Contract Scope:

- Excavation 839 CY
 - Embankment 2,946 CY
 - Limerock (Finish Grade) 6,749 SY
 - Rip Rap 150 CY
 - Grading 13,786 SY
-

Project Number: 007

Project Name: E6100 - SE 26th Rd

Owner: Florida Department of Transportation

Contractor: The Stout Group, LLC (Prime)

Contact: Joey Sanchez, PE

Address: 10850 NW 138th Street – Bay 3
Hialeah Gardens, FL 33018

Phone: 305-216-8406

Fax: 305-397-2311

Completed: March 2015

Contract Amount: \$95,480

Contract Scope:

- Sidewalk 159 SY
 - Asphalt
 - Traffic Level C – 12.5 42 TN
 - FC-9.5 (PG76-22) (ARB) 30 TN
-

Project Number: 008

Project Name: T6333 – NW 74th Street and 72nd Ave Intersection

Owner: Florida Department of Transportation

Contractor: The Stout Group, LLC (Prime)

Contact: Joey Sanchez, PE

Address: 10850 NW 138th Street – Bay 3
Hialeah Gardens, FL 33018
Phone: 305-216-8406
Fax: 305-397-2311

Completed: April 2015
Contract Amount: \$154,744
Contract Scope:

- Sidewalk 80 SY
- Curb and Gutter 123 LF
- Asphalt
 - FC-9.5 (PG76-22) (ARB) 153 TN

Project Number: 009

Project Name: PAMM Footing Installation
Owner: Perez Art Museum Miami (PAMM)

Contractor: The Stout Group, LLC (Prime)
Contact: Joey Sanchez, PE
Address: 10850 NW 138th Street – Bay 3
Hialeah Gardens, FL 33018
Phone: 305-216-8406
Fax: 305-397-2311

Completed: January 2015
Contract Amount: \$29,200
Contract Scope:

- Class I – Structural Concrete 50 CY

Project Number: 010

Project Name: Building 6 – Asphalt Improvements
Owner: Broward Community College

Contractor: Thornton Construction Company
Contact: Frank Gunn
Address: 4300 Biscayne Blvd #207
Miami, FL 33137
Phone: 305-649-1995
Fax: 305-649-1295

Completed: January 2015
Contract Amount: \$237,750
Contract Scope:

- Asphalt
 - Traffic Level C – 9.6 60 TN
-

Project Number: 012

Project Name: T4386 – SRA1A / Ocean Drive
Owner: Florida Department of Transportation

Contractor: ION Electric
Contact: Jack Higgins
Address: 2001 N. Andrews Avenue
Pompano Beach, FL 33069
Phone: 954-434-7432
Fax: 954-857-6687

Completed: July 2015
Contract Amount: \$51,200
Contract Scope:

- Structural Concrete (Pile Caps) 40 CY

Project Number: 013

Project Name: E6J26 – R0 – Districtwide Asphalt Maintenance
Owner: Florida Department of Transportation

Contractor: The Stout Group, LLC (Prime)
Contact: Joey Sanchez, PE
Address: 10850 NW 138th Street – Bay 3
Hialeah Gardens, FL 33018
Phone: 305-216-8406
Fax: 305-397-2311

Completed: December 2015
Contract Amount: \$250,000
Contract Scope:

- Asphalt
 - FC-12.5 (PG76-22) 625 TN

Project Number: 014

Project Name: Saxony Beach Walk
Owner: The Saxony Development

Contractor: ValleyCrest Landscape Development
Contact: Ariel Caballero
Address: 4155 East Mowry Drive
Homestead, FL 33033
Phone: 305-258-8011
Fax: 305-258-0809

Completed: August 2015
Contract Amount: \$295,000
Contract Scope:

- Demolition 1 LS
- Limerock (Finish Grade) 2,722 SY

Project Number: 015

Project Name: T6393 – Krome Ave (450+00 – 499+00)
Owner: Florida Department of Transportation

Contractor: Horizon Contractors, Inc.
Contact: Xavier Salvat, PE
Address: 8175 West 32nd Ave
Hialeah, FL 33018
Phone: 305-345-7816
Fax: 305-820-0905

Completed: Scheduled for December 2016

Contract Amount: \$2,655,311

Contract Scope:

▪ Clearing and Grubbing	1	LS
▪ Regular Excavation	3,805	CY
▪ Subsoil Excavation	52,475	CY
▪ Embankment	133,077	CY
▪ Prepared Soil Layer	60,978	SY
▪ Optional Base, Base Group 02	7,622	SY
▪ Optional Base, Base Group 10	26,133	SY

Project Number: 016

Project Name: Opalocka Airport Interior Service Road
Owner: Miami Dade Airport Department

Contractor: Horizon Contractors, Inc.
Contact: Xavier Salvat, PE
Address: 8175 West 32nd Ave
Hialeah, FL 33018
Phone: 305-345-7816
Fax: 305-820-0905

Completed: January 2016

Contract Amount: \$960,555

Contract Scope:

▪ Clearing and Grubbing	17	ACRE
▪ Demolition of Bituminous Pavement	1,600	SY
▪ On-Site Excavation	30,500	CY
▪ Proof Rolling	34,700	SY
▪ 12" Thick Stabilization Subgrade	29,471	SY
▪ 9" Thick Limerock Base Course	33,300	SY
▪ 24" RCP Class V (Cross Drain)	430	LF
▪ 24" Mitered End Section	14	EA
▪ Swale Grading	48,000	SY
▪ Canal Bank Stabilization	3,000	SY

Project Number: 017

Project Name: Tamiami Canal Bridge Replacement
Owner: Miami Dade County Public Works and Waste Management

Contractor: Archer Western
Contact: Dhaval Gandhi
Address: 3201 NW 24th Street Road
Miami, FL 33142
Phone: 786-804-6252

Completed: Scheduled to Complete February 2018

Contract Amount: \$ 932,749

Contract Scope:

▪ F&I PERMANENT SAMPLE POINTS	2.0	EA
▪ CONNECT TO EXISTING WM (20.0 - 49.9")	1.0	EA
▪ ARV ASSEMBLIES	2.0	EA
▪ F&I POLYETHYLENE ENCASEMENT	200.0	LF
▪ F&I TAPPING SLEEVE (20.0 - 49.9")	1.0	EA
▪ S&D FIRE HYDRANT ASSEMBLIES	2.0	EA
▪ S&D DIP (6 - 7.9") VALVE & FITTINGS	70.0	LF
▪ S&D DIP (8 - 9.9") VALVE & FITTINGS	120.0	LF
▪ FURINSH DIP (20 - 49.9") & FITTINGS	200.0	LF
▪ FURNISH MJ RSGV (20.0 - 49.9")	1.0	EA
▪ INSTALL FIRE HYDRANT ASSEMBLIES	2.0	EA
▪ INSTALL DIP (6 - 7.9") VALVE & FITTINGS	70.0	LF
▪ INSTALL DIP (8 - 9.9") VALVE & FITTINGS	120.0	LF
▪ INSTALL DIP (20 - 49.9") & FITTINGS	200.0	LF
▪ INSTALL MJ RSGV (20.0 - 49.9")	1.0	EA
▪ INLETS (CURB)(TYPE P-1) <10'	1.0	EA
▪ INLETS (CURB)(TYPE P-5) <10'	3.0	EA
▪ INLETS (CURB)(TYPE P-5) >10'	3.0	EA
▪ INLETS (CURB)(TYPE F) <10'	4.0	EA
▪ MANHOLES (TYPE P-7)(PARTIAL)	4.0	EA
▪ MANHOLES, P-8, <10'	1.0	EA
▪ MANHOLES, P-8, >10'	3.0	EA
▪ MANHOLES, J-8, <10'	1.0	EA
▪ MANHOLES, J-8, >10'	1.0	EA
▪ ADJUST MANHOLE	4.0	EA
▪ ADJUST MANHOLE (UTILITIES)	3.0	EA
▪ ADJUST VALVE BOX (MDC ONLY)	9.0	EA
▪ PIPE CULVERT - 18"	364.0	LF
▪ PIPE CULVERT - 24"	216.0	LF
▪ PIPE CULVERT - 24" (ELLIPTICAL\OTHER)	19.0	LF

▪ FRENCH DRAIN 24"	647.0	LF
▪ REMOVAL OF EXISTING PAVEMENT	100.0	SY
▪ REGULAR EXCAVATION	1,100.0	CY
▪ SUBSOIL EXCAVATION	3,597.0	CY
▪ CHANNEL EXCAVATION	4,408.0	CY
▪ EMBANKMENT	7,026.5	CY
▪ REINFORCEMENT GRID	2,083.0	SY
▪ TYPE "B" STABILIZATION (12" THICK)	6,419.0	SY
▪ OPTIONAL BASE, BASE GROUP 06	6,484.0	SY
▪ TURNOUT CONSTRUCTION	440.0	SY
▪ SP ASPHALTIC CONCRETE (TRAFFIC C)	17.4	TN

Project Number: 018

Project Name: T6396 – Krome Ave (54+21 – 109+00)
 Owner: Florida Department of Transportation

Contractor: Horizon Contractors, Inc.
 Contact: Xavier Salvat, PE
 Address: 8175 West 32nd Ave
 Hialeah, FL 33018
 Phone: 305-345-7816
 Fax: 305-820-0905

Completed: Scheduled for December 2016
 Contract Amount: \$3,489,368
 Contract Scope:

▪ Clearing and Grubbing	1	LS
▪ Regular Excavation	3,837	CY
▪ Subsoil Excavation	73,025	CY
▪ Embankment	174,449	CY
▪ Type B Stabilization	54,596	SY
▪ Prepared Soil Layer	69,630	SY
▪ Optional Base, Base Group 02	9,131	SY
▪ Optional Base, Base Group 10	30,018	SY

Project Number: 019

Project Name: Miscellaneous Drainage Repairs
 Owner: Interstate Screw Corp.

Owner: Interstate Screw Corp.
 Contact: Dominick Menendez
 Address: 475 West 18th Street
 Hialeah, FL 33010
 Phone: 305-888-8700
 Fax: 305-888-7081

Completed: Scheduled for December 2016

Contract Amount: \$4,375.00

Contract Scope:

- Miscellaneous Drainage Repairs 1 LS

Project Number: 020

Project Name: Shenandoah Middle School Renovation

Owner: Miami Dade County Public Schools

Contractor: Thornton Construction Company, Inc.

Contact: Dan Sheehy

Address: 4300 Biscayne Blvd
Suite 207
Miami, FL 33137

Phone: 305-649-1995

Fax: 305-649-1295

Completed: April 2016

Contract Amount: \$11,500.00

Contract Scope:

- Limerock Base 1 LS
- Superpave - Traffic Level C – 9.5 1 LS

Project Number: 021

Project Name: Emergency Asphalt Repair at the Downtown Mover (TPSS)

Owner: Miami Dade Transit

Contact: Nury Perez

Address: 6601 NW 72nd Ave
Miami, FL 33166

Phone: 305-884-7578

Fax: 305-884-7538

Completed: January 2016

Contract Amount: \$9,850.00

Contract Scope:

- Asphalt Repair 1 LS

Project Number: 023

Project Name: Drainage Improvements Project Multiple Sites

Owner: Miami Dade County Public Works Department

Contact: Felipe Monteagudo

Address: 111 NW 1st Street
Suite 1410
Miami, FL 33128

Phone: 305-323-8192

Completed: Anticipated Completion June 2017

Contract Amount: \$1,504,737.12

Contract Scope:

▪ BARRICADES	18600	ED
▪ ADVANCE WARNING ARROW PANEL	1050.0	ED
▪ Sediment Barrier	600.0	LF
▪ Inlet Protection System	91.0	EA
▪ CLEARING AND GRUBBING	1.0	LS
▪ RE-GRADE EXISTING SWALE	140.0	SY
▪ FLOWABLE FILL	28.0	CY
▪ BACKFILL EXISTING TRENCH WITH SELECT FILL	278.0	CY
▪ MILLING - 1" Depth	4878.0	SY
▪ ROADWAY PAVEMENT RESTORATION	2524.0	SY
▪ INLET PAVEMENT	393.0	SY
▪ Hot Mix Asphalt, Traffic C, SP-9.5	555.0	TN
▪ Driveway Pavement-Asphalt	100.0	SY
▪ Driveway Pavement-Concrete	20.0	SY
▪ CLASS I CONCRETE	30.0	CY
▪ SWALE INLET TYPE D-3 (36"Dia.)	37.0	EA
▪ SWALE INLET TYPE D-3 (36"X36")	17.0	EA
▪ SWALE INLET TYPE D-1 (17" X 27") (< 10' Deep)	14.0	EA
▪ SWALE INLET TYPE P-10M	14.0	EA
▪ SWALE INLET TYPE J-10	1.0	EA
▪ POLLUTION RETARDANT BAFFLE	3.0	EA
▪ MANHOLE (Type P-7T)	30.0	EA
▪ CORE AND TIE TO EXIST. DRAINAGE	9.0	EA
▪ MODIFY STRUCTURE-	17.0	EA
▪ DESILT PIPE (0 TO 48")	1000.0	LF
▪ Desilting Drainage Structure	12.0	EA
▪ Pipe Culvert 15" Diameter (Round)	1541.0	LF
▪ Pipe Culvert 18" Diameter (Round)	410.0	LF
▪ French Drain (18" diameter pipe, 10 ft bls)	3445.0	LF
▪ French Drain (18" diameter pipe, 15 ft bls)	380.0	LF
▪ French Drain (18" diameter pipe, 20 ft. BLS)	550.0	LF
▪ CONCRETE SIDEWALK [4" THICK,]	463.0	SY
▪ CONCRETE SIDEWALK (6" Thick)	110.0	SY
✓ ▪ DETECTABLE SURFACE	94.0	SF
▪ RIP RAP (SAND CEMENT)	17.0	CY
▪ SODDING-St Augustine	12520.0	SY
▪ REFLECTIVE PAVEMENT MARKERS	25.0	EA
▪ THERMOPLASTIC (White) (Solid) (12")	54.0	LF
▪ THERMOPLASTIC (White) (Solid) (24")	200.0	LF
▪ THERMOPLASTIC (Yellow) (Solid) (6")	450.0	LF

Project Number: 024

Project Name: Joseph Caleb Center New Parking Garage

Owner: Miami Dade County

Contractor: ABC Construction, Inc.

Contact: Jorge Gonzalez

Address: 7215 NW 7th Street

Miami, FL 33126

Phone: 305-663-0322

Fax: 305-267-2403

Completed: April 2017

Contract Amount: \$196,514.26

Contract Scope:

▪ Milling Existing Asphalt (1" AVG)	7505	SY
▪ Superpave - Traffic Level C – 9.5	489	TN
▪ Friction Course - Traffic Level C – 9.5	396	TN

Project Number: 025

Project Name: SR 953 – Lejeune Rd from Almeria Ave to Majorca Ave

Owner: Florida Department of Transportation

Contractor: The Stout Group, LLC (Prime)

Contact: Joey Sanchez, PE

Address: 10850 NW 138th Street – Bay 3

Hialeah Gardens, FL 33018

Phone: 305-216-8406

Fax: 305-397-2311

Completed: April 2017

Contract Amount: \$1,155,672.82

Contract Scope:

▪ MOBILIZATION	1	LS
▪ MAINTENANCE OF TRAFFIC	1	LS
▪ TRAFFIC CONTROL OFFICER	456	MH
▪ WORK ZONE SIGN	6650	ED
▪ BARRIER WALL, TEMPORARY, F&I, CONCRETE	185	LF
▪ CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	5900	ED
▪ CHANNELIZING DEVICE, TYPE III, 6'	570	ED
▪ ARROW BOARD / ADVANCE WARNING ARROW PANEL	440	ED
▪ TEMPORARY RETROREFLECTIVE PAVEMENT MARKER	194	EA
▪ PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	388	ED
▪ TEMPORARY SIGNALIZATION AND MAINTENANCE, INTERSECTION	180	ED
▪ TEMPORARY TRAFFIC DETECTION AND MAINTENANCE, INTERSECTION	180	ED

▪ INLET PROTECTION SYSTEM	19	EA
▪ LITTER REMOVAL	7.08	AC
▪ MOWING	1.8	AC
▪ MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING	1	LS
▪ MONITOR EXISTING STRUCTURES- VIBRATION MONITORING	1	LS
▪ CLEARING & GRUBBING 43349215201	1	LS
▪ DELIVERY OF SALVAGEABLE MATERIAL TO FDOT 43349215201	1	LS
▪ REGULAR EXCAVATION (3-R PROJECTS ONLY) 43349215201	1	LS
▪ TYPE B STABILIZATION	532	SY
▪ PREPARED SOIL LAYER, FINISH SOIL LAYER, 6"	604	SY
▪ OPTIONAL BASE, BASE GROUP 11	478	SY
▪ MILLING EXIST ASPH PAVT, 1 1/2" AVG DEPTH	4398	SY
▪ SUPERPAVE ASPHALTIC CONC, TRAFFIC C	52.6	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-12.5, PG 76-22, ARB	402.4	TN
▪ INLETS, CURB, TYPE 9, <10'	2	EA
▪ INLETS, GUTTER, TYPE S, <10'	1	EA
▪ MANHOLES, P-7, <10'	1	EA
▪ MANHOLE, ADJUST	10	EA
▪ PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	49	LF
▪ FRENCH DRAIN, 24"	120	LF
▪ CONCRETE CURB & GUTTER, TYPE F	880	LF
▪ CONCRETE CURB, TYPE D	616	LF
▪ CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	395	SY
▪ CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	36	SY
▪ DETECTABLE WARNINGS	116	SF
▪ PERFORMANCE TURF, SOD	427	SY
▪ IRRIGATION SYSTEM REPAIRS 43349215201	1	LS
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	0.324	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR INTERCHANGE AND URBAN ISLAND, 8"	0.077	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR CROSSWALK AND ROUNDABOUT, 12"	540	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR DIAGONAL OR CHEVRON, 18"	187	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR STOP LINE OR CROSSWALK, 24"	190	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SKIP, 10-30 OR 3-9 SKIP, 6" WIDE	0.015	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 DOTTED EXTENSION, 6"	0.013	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, MESSAGE OR SYMBOL	10	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, ARROWS	27	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	0.585	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID FOR DIAGONAL OR CHEVRON, 18"	28	LF

PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, 2-4 DOTTED GUIDELINE/6-10 DOTTED EXTENSION, 6"	0.026	GM
SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	18	AS
SINGLE POST SIGN, RELOCATE	1	AS
SINGLE POST SIGN, REMOVE	11	AS
SIGN PANEL, RELOCATE, UP TO 12 SF	8	EA
DELINEATOR, FLEXIBLE HIGH PERFORMANCE 48"	15	EA
PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, ISLAND NOSE	38	SF
PAINTED PAVEMENT MARKINGS, FINAL SURFACE 43349215201	1	LS
THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	540	LF
THERMOPLASTIC, STANDARD, WHITE, SOLID, 18" FOR DIAGONALS AND CHEVRONS	187	LF
THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	190	LF
THERMOPLASTIC, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 GAP EXTENSION, 6"	0.013	GM
THERMOPLASTIC, STANDARD, WHITE, MESSAGE OR SYMBOL	3	EA
THERMOPLASTIC, STANDARD, WHITE, ARROW	22	EA
THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONAL OR CHEVRON	28	LF
THERMOPLASTIC, STANDARD, YELLOW, 2-4 DOTTED GUIDE LINE /6-10 DOTTED EXTENSION LINE, 6"	0.026	GM
THERMOPLASTIC, PREFORMED, WHITE, MESSAGE	7	EA
THERMOPLASTIC, PREFORMED, WHITE, ARROWS	5	EA
THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.324	GM
THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 8"	0.077	GM
THERMOPLASTIC, OTHER SURFACES, WHITE, SKIP, 6", 10-30 SKIP OR 3-9 LANE DROP	0.015	GM
THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.585	GM
THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS	20	SF
CONDUIT, FURNISH & INSTALL, OPEN TRENCH	458	LF
CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	354	LF
PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	12	EA
LIGHTING CONDUCTORS, F&I, INSULATED, NO. 10 OR <	646	LF
LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	4765	LF
LIGHTING CONDUCTORS, REMOVE & DISPOSE, CONTRACTOR OWNS	6914	LF
LUMINAIRE, RELOCATE	30	EA
LUMINAIRE, REMOVE	60	EA
POLE CABLE DISTRIBUTION SYSTEM, CONVENTIONAL	4	EA
CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	1178	LF
SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	1	PI
SIGNAL CABLE, REMOVE- INTERSECTION	1	PI
PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	31	EA

▪ ELECTRICAL POWER SERVICE, F&I, UNDERGROUND, METER PURCHASED BY CONTRACTOR	1	AS
▪ ELECTRICAL POWER SERVICE, REMOVE UNDERGROUND	1	AS
▪ ELECTRICAL SERVICE WIRE, REMOVE	195	LF
▪ PRESTRESSED CONCRETE POLE, F&I, TYPE P-II SERVICE POLE	1	EA
▪ PRESTRESSED CONCRETE POLE, COMPLETE POLE REMOVAL-PEDESTAL/SERVICE POLE	1	EA
▪ ALUMINUM SIGNALS POLE, PEDESTAL	4	EA
▪ ALUMINUM SIGNALS POLE, REMOVE	2	EA
▪ STEEL MAST ARM, F&I, WIND SPEED-150, SINGLE ARM, W/O LUMINAIRE-36	2	EA
▪ MAST ARM, F&I, WIND SPEED-150, SINGLE ARM, W/O LUMINAIRE-46	2	EA
▪ MAST ARM, REMOVE SHALLOW FOUNDATION, BOLT ON ATTACHMENT	4	EA
▪ TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 3 SECTION, 1 WAY	3	AS
▪ TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 5 SECTION STRAIGHT, 1 WAY	5	AS
▪ PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	4	AS
▪ PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	2	AS
▪ LOOP DETECTOR INDUCTIVE, F&I, TYPE 9	6	EA
▪ LOOP ASSEMBLY- F&I, TYPE A	8	AS
▪ PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	4	EA
▪ TRAFFIC CONTROLLER ASSEMBLY, F&I, 170	1	AS
▪ TRAFFIC CONTROLLER ASSEMBLY, REMOVE CONTROLLER WITH CABINET	1	AS
▪ SYSTEM AUXILIARIES, F&I, MODEM	1	EA
▪ INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	4	EA
▪ LANDSCAPE COMPLETE- SMALL PLANTS 43349215201	1	LS
▪ LANDSCAPE COMPLETE- LARGE PLANTS 43349215201	1	LS
▪ VALVE BOXES, ADJUST	7	EA

Project Number: 026

Project Name:	Miami Dade Countywide Drainage Pushbutton
Owner:	Florida Department of Transportation
Contractor:	The Stout Group, LLC (Prime)
Contact:	Joey Sanchez, PE
Address:	10850 NW 138 th Street – Bay 3 Hialeah Gardens, FL 33018
Phone:	305-216-8406
Fax:	305-397-2311
Completed:	December 2018

Contract Amount: \$848,713.00

Contract Scope:

▪ COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	50	CY
▪ TRAFFIC CONTROL OFFICER	300	MH
▪ WORK ZONE SIGN	5000	ED
▪ BUSINESS SIGN	20	EA
▪ BARRIER WALL, TEMPORARY, F&I, CONCRETE	500	LF
▪ BARRIER WALL, TEMPORARY, F&I, TYPE K	500	LF
▪ CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	6000	ED
▪ CHANNELIZING DEVICE, TYPE III, 6'	1025	ED
▪ CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	50	ED
▪ ARROW BOARD / ADVANCE WARNING ARROW PANEL	275	ED
▪ TEMPORARY RETROREFLECTIVE PAVEMENT MARKER	50	EA
▪ TEMPORARY CRASH CUSHION, REDIRECTIVE OPTION	5	LO
▪ PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	100	ED
▪ PAVEMENT MARKING REMOVABLE TAPE, WHITE OR BLACK,SOLID	1163	LF
▪ PAVEMENT MARKING REMOVABLE TAPE, YELLOW, SOLID	1513	LF
▪ SEDIMENT BARRIER	400	LF
▪ FLOATING TURBIDITY BARRIER	250	LF
▪ INLET PROTECTION SYSTEM	40	EA
▪ LITTER REMOVAL	1	AC
▪ MOWING	1	AC
▪ REMOVAL OF EXISTING CONCRETE PAVEMENT	200	SY
▪ REGULAR EXCAVATION	300	CY
▪ BORROW EXCAVATION, TRUCK MEASURE	600	CY
▪ LATERAL DITCH EXCAVATION	350	CY
▪ SUBSOIL EXCAVATION	200	CY
▪ EMBANKMENT	600	CY
▪ FLOWABLE FILL	100	CY
▪ EXCAVATION FOR STRUCTURES Excavation for Structures and Pipes	200	CY
▪ TYPE B STABILIZATION	150	SY
▪ OPTIONAL BASE, BASE GROUP 04	10	SY
▪ OPTIONAL BASE, BASE GROUP 09	1500	SY
▪ OPTIONAL BASE, BASE GROUP 11	1500	SY
▪ OPTIONAL BASE, BASE GROUP 13	250	SY
▪ MILLING EXIST ASPH PAVT, 1 AVG DEPTH	4000	SY
▪ MILLING EXIST ASPH PAVT, 1 1/2 AVG DEPTH	300	SY
▪ MILLING EXIST ASPH PAVT, 1 3/4 AVG DEPTH	300	SY
▪ SUPERPAVE ASPHALTIC CONC, TRAFFIC C	150	TN
▪ SUPERPAVE ASPHALTIC CONC, TRAFFIC D	20	TN

▪ SUPERPAVE ASPH CONC, TRAFFIC C, PG76-22, PMA	60	TN
▪ ASPHALT CONCRETE FRICTION COURSE, FC-5, PG 76-22, ARB	40	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-9.5, PG 76-22, PMA	1	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-12.5, PG 76-22, PMA	5	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC D, FC-12.5, PG 76-22, PMA	5	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC B, FC-9.5, PG 76-22, ARB	160	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC B, FC-12.5, PG 76-22, ARB	40	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-9.5, PG 76-22, ARB	160	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-12.5, PG 76-22, ARB	20	TN
▪ MISCELLANEOUS ASPHALT PAVEMENT	20	TN
▪ CONCRETE CLASS II, CULVERTS	50	CY
▪ CONCRETE CLASS IV, CULVERTS	30	CY
▪ CONC CLASS IV, RETAINING WALLS	30	CY
▪ REINFORCING STEEL- RETAINING WALL	350	LB
▪ REINFORCING STEEL- MISCELLANEOUS	1000	LB
▪ INLETS, CURB, TYPE P-1, <10'	2	EA
▪ INLETS, CURB, TYPE P-5, <10'	6	EA
▪ INLETS, CURB, TYPE P-5, >10'	2	EA
▪ INLETS, CURB, TYPE P-5, PARTIAL	2	EA
▪ INLETS, CURB, TYPE P-5, MODIFY	2	EA
▪ INLETS, CURB, TYPE P-6, <10'	6	EA
▪ INLETS, CURB, TYPE P-6, >10'	1	EA
▪ INLETS, CURB, TYPE P-6, PARTIAL	2	EA
▪ INLETS, CURB, TYPE P-6, MODIFY	2	EA
▪ INLETS, CURB, TYPE J-5, <10'	2	EA
▪ INLETS, CURB, TYPE J-5, >10'	1	EA
▪ INLETS, CURB, TYPE J-6, <10'	2	EA
▪ INLETS, CURB, TYPE J-6, >10'	2	EA
▪ INLETS, DT BOT, TYPE C, <10'	1	EA
▪ INLETS, DT BOT, TYPE C, JBOT, <10'	2	EA
▪ INLETS, DT BOT, TYPE C, JBOT, >10'	1	EA
▪ INLETS, DT BOT, TYPE D, <10'	4	EA
▪ INLETS, DT BOT, TYPE D, >10'	2	EA
▪ INLETS, DITCH BOTTOM, TYPE F, PARTIAL	2	EA
▪ INLETS, DITCH BOTTOM, TYPE G, <10'	2	EA
▪ INLETS, DITCH BOTTOM, TYPE G, >10'	1	EA
▪ INLETS, DITCH BOTTOM, TYPE G, J BOT, <10'	2	EA

▪ INLETS, DITCH BOTTOM, TYPE G, J BOT, >10'	1	EA
▪ INLETS, GUTTER, TYPE V, <10'	4	EA
▪ INLETS, GUTTER, TYPE V, >10'	2	EA
▪ INLETS, GUTTER, TYPE V, J BOT, <10'	2	EA
▪ INLETS, GUTTER, TYPE V, J BOTTOM, >10'	2	EA
▪ MANHOLES, P-7, <10'	2	EA
▪ MANHOLES, P-7, >10'	4	EA
▪ MANHOLES, P-7, PARTIAL	2	EA
▪ MANHOLES, J-7, <10'	4	EA
▪ MANHOLES, J-7, >10'	2	EA
▪ MANHOLES, J-7, PARTIAL	2	EA
▪ INLETS, ADJUST	10	EA
▪ MANHOLE, ADJUST	10	EA
▪ VALVE BOXES, ADJUST	5	EA
▪ DRAINAGE STRUCTURES, MISCELLANEOUS, ADJUST	5	EA
▪ REPLACE GRATE	10	EA
▪ DESILTING PIPE, 0 - 24 Desilt in the Wet	273	LF
▪ DESILTING PIPE, 25 - 36 Desilt in Dry Condition	750	LF
▪ DESILTING PIPE, 37 - 48 Desilt in Dry Condition	400	LF
▪ DESILTING PIPE, 49 - 60 Desilt in the Wet	159	LF
▪ DESILTING PIPE, 61 OR GREATER Desilt in the Wet	400	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 15S/CD	100	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18S/CD	500	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24S/CD	200	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 30S/CD	200	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 36S/CD	200	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 42S/CD	100	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 48S/CD	100	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 54S/CD	100	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 60S/CD	100	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,OTHER-ELIP/ARCH, 15S/CD	50	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,OTHER-ELIP/ARCH, 18S/CD	50	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,OTHER SHAPE-ELIP/ARCH, 24S/CD	50	LF
▪ U-ENDWALL, STD 261, 1:4 SLOPE, 18PIPE	4	EA
▪ PIPE FILLING AND PLUGGING- PLACE OUT OF SERVICE	20	CY
▪ TRENCH DRAIN, STANDARD	150	LF
▪ FRENCH DRAIN, 24	400	LF
▪ FRENCH DRAIN, 36	100	LF
▪ PIPE HANDRAIL - GUIDERAIL, STEEL	150	LF
▪ PIPE HANDRAIL - GUIDERAIL, ALUMINUM	150	LF
▪ CONCRETE CURB & GUTTER, TYPE F	600	LF

▪ CONCRETE CURB, TYPE D	100	LF
▪ VALLEY GUTTER- CONCRETE	100	LF
▪ SHOULDER CONCRETE BARRIER WALL, RIGID RETAINING	20	LF
▪ CONCRETE SIDEWALK AND DRIVEWAYS, 4 THICK	150	SY
▪ CONCRETE SIDEWALK AND DRIVEWAYS, 6 THICK	50	SY
▪ CONCRETE DITCH PAVEMENT, NON REINFORCED, 4	10	SY
▪ CONCRETE DITCH PAVEMENT, 4, REINFORCED	50	SY
▪ PAVERS, ARCHITECTURAL, SIDEWALK	150	SY
▪ DETECTABLE WARNINGS	8	SF
▪ GUARDRAIL -ROADWAY	100	LF
▪ SPECIAL GUARDRAIL POST	5	EA
▪ GUARDRAIL REMOVAL	100	LF
▪ FENCING, TYPE B, 5.1-6.0', STANDARD	200	LF
▪ FENCING, TYPE B, 5.1-6.0, RESET EXISTING	50	LF
▪ PERFORMANCE TURF	1000	SY
▪ PERFORMANCE TURF, SOD	1000	SY
▪ SINGLE POST SIGN, RELOCATE	5	AS
▪ SINGLE POST SIGN, REMOVE	5	AS
▪ MULTI- POST SIGN, F&I GROUND MOUNT, RELOCATE	5	AS
▪ MULTI- POST SIGN, REMOVE	5	AS
▪ OBJECT MARKER, TYPE 1 TWO # 04	5	EA
▪ RETRO-REFLECTIVE PAVEMENT MARKERS	100	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6	0.1	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR INTERCHANGE AND URBAN ISLAND, 8	0.1	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR CROSSWALK AND ROUNDABOUT, 12	400	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR DIAGONAL OR CHEVRON, 18	600	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR STOP LINE OR CROSSWALK, 24	100	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SKIP, 10-30 OR 3-9 SKIP, 6 WIDE	0.1	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 DOTTED EXTENSION, 6	0.2	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, MESSAGE OR SYMBOL	2	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, ARROWS	5	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6	0.1	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID FOR DIAGONAL OR CHEVRON, 18	20	LF

▪ PAINTED PAVEMENT MARKINGS, STANDARD, BLUE, SOLID FOR PARKING LOT- ACCESSIBLE MARKINGS, 6	50	LF
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 12 FOR CROSSWALK AND ROUNDABOUT	600	LF
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 18 FOR DIAGONALS AND CHEVRONS	400	LF
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 24 FOR STOP LINE AND CROSSWALK	50	LF
▪ THERMOPLASTIC, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 GAP EXTENSION, 6	0.1	GM
▪ THERMOPLASTIC, STANDARD, WHITE, MESSAGE OR SYMBOL	5	EA
▪ THERMOPLASTIC, STANDARD, WHITE, ARROW	5	EA
▪ THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18 FOR DIAGONAL OR CHEVRON	100	LF
▪ THERMOPLASTIC, STANDARD, BLUE, SOLID,6	100	LF
▪ THERMOPLASTIC, STANDARD-OPEN GRADED ASPHALT SURFACES, WHITE, SOLID, 8	0.1	GM
▪ THERMOPLASTIC, STANDARD-OPEN GRADED ASPHALT SURFACES YELLOW, SOLID, 8	0.1	GM
▪ THERMOPLASTIC, OTHER SURFACES, WHITE, SKIP, 6,10-30 SKIP OR 3-9 LANE DROP	0.1	GM
▪ THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS	50	SF
▪ LIGHT POLE COMPLETE, REMOVE	5	EA
▪ LUMINAIRE, REMOVE	5	EA
▪ CONDUIT, FURNISH & INSTALL, OPEN TRENCH	100	LF
▪ CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	50	LF
▪ PULL & SPLICE BOX, F&I, 13 x 24 COVER SIZE	5	EA
▪ ALUMINUM SIGNALS POLE, PEDESTAL	5	EA
▪ ALUMINUM SIGNALS POLE, REMOVE	2	EA
▪ PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	5	AS
▪ PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	5	AS
▪ LOOP DETECTOR INDUCTIVE, F&I, TYPE 9	5	EA
▪ LOOP ASSEMBLY- F&I, TYPE A	5	AS
▪ PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	10	EA
▪ TRAFFIC CONTROLLER ASSEMBLY, MODIFY	1	AS

Project Number: 027

Project Name: Bay Shore One Project – 1100 100th Street – Bay Harbor Island, FL
Owner: Thornton Construction

Contractor: Thornton Construction
Contact: Anthony Pasqualone
Address: 4300 Biscayne Blvd – Suite 207
Miami, FL 33137
Phone: 305-649-1995
Fax: 305-649-1295

Completed: December 2016
Contract Amount: \$34,841.25

Contract Scope:

▪ MOBILIZATION	1	LS
▪ SITE CLEARING & GRUBBING	0.45	ACRE
▪ SILT FENCE	560	LF
▪ SUBSOIL EXCAVATION	1185	CY
▪ EARTH RAMP	1	LS
▪ LIMEROCK BASE	1	LS

Project Number: 028

Project Name: CT A – Relocation of Onsite Utilities and Drainage
Owner: Port of Miami

Contractor: Central Florida Equipment Rentals, Inc. (Prime)
Contact: Ana Depriest
Address: 9030 NW 97th Terrace
Medley, FL 33178
Phone: 305-345-9039
Fax: 305-887-7804

Completed: June 2017
Contract Amount: \$1,413,688.89

Contract Scope:

▪ UTILITIES		
▪ MOBILIZATION	1	LS
▪ 12 DIP WATER MAIN (L&E)	1	LS
▪ 6 DIP WATER MAIN (L&E)	1	LS
▪ FIRE HYDRANT w/ 6 GV & 4 BOLLARDS(L&E)	1	LS
▪ 12 BENDS (L&E)	1	LS
▪ 12 x 6 TEES (L&E)	1	LS
▪ 12 GATE VALVES	1	LS
▪ SANITARY SEWER MANHOLE	1	LS
▪ SANITARY SEWER CAPS	1	LS
▪ ASPHALT DEMO / RESTORATION	1	LS
▪ DRAINAGE		
▪ MOBILIZATION	1	LS
▪ CURB INLET TYPE 5, 6	1	LS

▪ MEDIAN BARRIER INLET, TYPE 3	1	LS
▪ CATCH BASIN	1	LS
▪ DRAINAGE MANHOLE	1	LS
▪ ADJUST MANHOLES	1	LS
▪ PIPE CULVERT OPTIONAL MATERIAL, 18	1	LS
▪ PIPE CULVERT OPTIONAL MATERIAL, 24	1	LS
▪ FRENCH DRAIN, 24	1	LS
▪ SPECIAL STRUCTURE, TWO CHAMBERED (6'x9.5'x9.5')	1	LS
▪ ASPHALT DEMO / RESTORATION	1	LS

Project Number: 029

Project Name: Kendall Town Center (SW 96th Street and SW 157th Ave)

Owner: Howard Hughes Corp.

Contractor: Brightview Landscape Development

Contact: Ariel Caballero

Address: 4155 East Mowry Dr.
Homestead, FL 33033

Phone: 305-986-2249

Completed: February 2017

Contract Amount: \$107,422.20

Contract Scope:

▪ MOBILIZATION	1.00	LS
▪ CLEARING AND GRUBBING	1.00	LS
▪ SURVEYING	1.00	LS
▪ EXCAVATION (4 AVERAGE DEPTH)	215.00	CY
▪ STABILIZED SUBGRADE	1250.00	SY
▪ SOD GRADING (5' EACH SIDE OF SIDEWALK)	2084.00	SY
▪ CONC. SIDEWALK (4 THK w/ 6X6 W2.9/W2.9 WWM)	1250.00	SY
▪ BENCH PADS (5' x 8')	4.00	EA
▪ SIDEWALK RAMP	1.00	LS
▪ GRADING	1.00	LS

Project Number: 030

Project Name: Ballpark of the Palm Beaches

Owner: Palm Beach County

Contractor: Brightview Landscape Development

Contact: Ariel Caballero

Address: 4155 East Mowry Dr.
Homestead, FL 33033

Phone: 305-986-2249

Completed: January 2017

Contract Amount: \$214,397.29

Contract Scope:

▪ 4in THICK SIDEWALK w/ WELDED WIRE MESH	73976.00	SF
▪ LOADING DOCK (2 DOCKS - 6500 SF TOTAL)	1.00	LS
▪ FLUSH REINFORCED HEADER CURB	718.00	LF
▪ BATTING CAGE TUNNEL SLAB	7890.00	SF
▪ PUMP RENTAL - 2 DAILY RATE	2.00	DA
▪ PUMP RENTAL - 2 DAILY RATE	7.00	DA
▪ FLUSH REINFORCED HEADER CURB	705.00	LF
▪ 6in THICK SIDEWALK w/ WELDED WIRE MESH (COLOR)	2970.00	SF
▪ 8in THICK SIDEWALK w/ #4 O.C.E.W (COLOR)	1430.00	SF

Project Number: 031

Project Name: SR – 823 NW 57th Ave
Owner: Florida Department of Transportation

Contractor: Central Florida Equipment Rentals, Inc. (Prime)
Contact: Ana Depriest
Address: 9030 NW 97th Terrace
Medley, FL 33178
Phone: 305-345-9039
Fax: 305-887-7804

Completed: February 2017
Contract Amount: \$11,912.00
Contract Scope:

▪ FINISH GRADE WORK	1	LS
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Project Number: 032

Project Name: SR 874 Project
Owner: MDX – Miami Dade Expressway Authority

Contractor: The de Moya Group
Contact: Fabricio Cedillo
Address: 14600 SW 136th Street
Miami, FL 33186
Phone: 305-987-4097
Fax: 305-255-1935

Completed: December 2018
Contract Amount: \$584,780.45
Contract Scope:

▪ MOBILIZATION	1.0	LS
▪ CLEARING AND GRUBBING	1.0	LS

▪ C&G - CONTROL STRUCTURE	1.0	EA
▪ C&G - DITCH BOTTOM INLET	10.0	EA
▪ C&G - ENDWALL	1.0	EA
▪ C&G - MANHOLE	2.0	EA
▪ C&G - FRENCH DRAIN 36	310.0	LF
▪ C&G - PIPE	210.0	LF
▪ CONCRETE CLASS I - ENDWALLS	1.00	EA
▪ INLETS, DT BOT, TYPE B, <10'	5.0	EA
▪ INLETS, DT BOT, TYPE D, MODIFY	2.0	EA
▪ INLETS, DT BOT, TYPE E, <10'	6.0	EA
▪ INLETS, DT BOT, TYPE E, PARTIAL	2.0	EA
▪ INLETS, BARRIER WALL, <10'	8.0	EA
▪ INLETS, BARRIER WALL, >10'	1.0	EA
▪ INLETS, BARRIER WALL, J BOT, <10'	3.0	EA
▪ INLETS, BARRIER WALL, J BOT, >10'	2.0	EA
▪ MANHOLES, P-7, <10'	6.0	EA
▪ MANHOLES, TYPE 7, PARTIAL	2.0	EA
▪ MANHOLES, J-7, <10'	1.0	EA
▪ MANHOLES, J-7, >10'	2.0	EA
▪ PIPE CULV, OPT MATL, ROUND, 18S/CD	1,379.0	LF
▪ PIPE CULV, OPT MATL, ROUND, 18S/CD	144.0	LF
▪ PIPE CULV, OPT MATL, ROUND, 24S/CD	793.0	LF
▪ PIPE CULV, OPT MATL, ROUND, 30S/CD	28.0	LF
▪ PIPE CULV, OPT MATL, ROUND, 36S/CD	20.0	LF
▪ FRENCH DRAIN, 24	1,006.0	LF
▪ 18 RCP CLASS IV	15.0	LF
▪ 18 RCP CLASS V	34.0	LF
▪ CLEAN\VIDEO PIPE (NEW PIPE ONLY)	2,269.0	LF
▪ CLEAN STRUCTURES	40.0	EA
▪ MOBILIZATION 24961435201	1.0	LS
▪ TEMP PAVEMENT (SUBGRADE & 6 BASE)	1.0	SY
▪ PULVERIZE EXISTING ASPHALT (4 MAX DEPTH)	16,685.0	SY
▪ REGULAR EXCAVATION	5,887.0	CY
▪ EMBANKMENT	4,885.0	CY
▪ TYPE B STABILIZATION	41,101.0	SY
▪ OPTIONAL BASE, BASE GROUP 06	41,101.0	SY
▪ CURB TYPE E, GRADING ONLY	727.0	LF
▪ CONC CURB & GUTR, F (4 LRB PAD & GRADING ONLY)	18,447.0	LF
▪ VALLEY GUTTER, 2' GRADING ONLY	2,021.0	LF
▪ TRAF SEP CONC, IV, 6' W (GRADING ONLY)	1.0	LF
▪ MED CONC BARRIER WALL (GRADING ONLY)	1.0	LF
▪ SIDEWALK 4 (GRADING ONLY)	8,998.0	SY
▪ SIDEWALK 6 (GRADING ONLY)	2,565.0	SY

▪ GUARDRAIL ?ROADWAY (GRADING ONLY)	1.0	LF
▪ FENCE B, 6' STANDARD (GRADING ONLY)	1.0	LF
▪ PERFORMANCE TURF,SOD, (GRADING ONLY)	5,406.0	SY

Project Number: 033

Project Name:	Turnpike (HEFT) from Eureka Drive to Killian Parkway	
Owner:	Florida Department of Transportation	
Contractor:	The de Moya Group	
Contact:	Fabricio Cedillo	
Address:	14600 SW 136 th Street Miami, FL 33186	
Phone:	305-987-4097	
Fax:	305-255-1935	
Completed:	April 2017	
Contract Amount:	\$17,241.00	
Contract Scope:	<ul style="list-style-type: none"> ▪ RIPRAP, SAND CEMENT 20 CY 	

Project Number: 035

Project Name:	West 31 st Street and West 32 nd Street from West 12 th Ave to West 12 th Ave to West 9 th Avenue; West 11 th Avenue and West 9 th Avenue from West 30 th Street to West 33 rd Street	
Owner:	City of Hialeah	
Contractor:	Horizon Contractors, Inc.	
Contact:	Jose M Sanchez	
Address:	8175 West 32 nd Ave – Bay 2 Hialeah, FL 33018	
Phone:	305-216-8403	
Fax:	305-820-0905	
Completed:	July 2017	
Contract Amount:	\$580,593.75	
Contract Scope:	<ul style="list-style-type: none"> ▪ CONCRETE CURB AND GUTTER TYPE F 11,777.0 LF ▪ CONCRETE CURB TYPE D 1,650.0 LF ▪ CONCRETE VALLEY GUTTER (2') ▪ CONCRETE SIDEWALK (4 THICK) 5,416.0 SY ▪ CONCRETE SIDEWALK (6 THICK) 6,267.0 SY 	

Project Number: 036

Project Name: SR 5 (SE 2nd Ave) and SR 5 (US 1/Biscayne Blvd)
Owner: Florida Department of Transportation

Contractor: The Stout Group, LLC (Prime)
Contact: Joey Sanchez, PE
Address: 10850 NW 138th Street – Bay 3
Hialeah Gardens, FL 33018
Phone: 305-216-8406
Fax: 305-397-2311

Completed: December 2018

Contract Amount: \$3,499,047.23

Contract Scope:

▪ MOBILIZATION 41247375201	1	LS
▪ MOBILIZATION 41247375202	1	LS
▪ MOBILIZATION 41247395201	1	LS
▪ MAINTENANCE OF TRAFFIC 41247375201	1	LS
▪ MAINTENANCE OF TRAFFIC 41247375202	1	LS
▪ MAINTENANCE OF TRAFFIC 41247395201	1	LS
▪ SPECIAL DETOUR 1 41247395201	1	LS
▪ COMMERCIAL MATERIAL FOR TEMPORARY DRIVEWAY MAINTENANCE	38	CY
▪ TRAFFIC CONTROL OFFICER	374	HR
▪ WORK ZONE SIGN	13446	ED
▪ BARRIER WALL, TEMPORARY, F&I, TYPE K	2166	LF
▪ BARRIER WALL, TEMPORARY, RELOCATE, TYPE K	2500	LF
▪ CHANNELIZING DEVICE- TYPES I, II, DI, VP, DRUM, OR LCD	32492	ED
▪ CHANNELIZING DEVICE, TYPE III, 6'	6042	ED
▪ CHANNELIZING DEVICE- PEDESTRIAN LCD (LONGITUDINAL CHANNELIZING DEVICE)	34100	ED
▪ ARROW BOARD / ADVANCE WARNING ARROW PANEL	1638	ED
▪ TEMPORARY RETROREFLECTIVE PAVEMENT MARKER	246	EA
▪ TEMPORARY CRASH CUSHION, REDIRECTIVE OPTION	32	LO
▪ PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY	1160	ED
▪ TEMPORARY SIGNALIZATION AND MAINTENANCE, INTERSECTION	1680	ED
▪ TEMPORARY TRAFFIC DETECTION AND MAINTENANCE, INTERSECTION	1680	ED
▪ INLET PROTECTION SYSTEM	30	EA
▪ LITTER REMOVAL	33.97	AC
▪ MOWING	0.18	AC
▪ MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING 41247375202	1	LS
▪ MONITOR EXISTING STRUCTURES- INSPECTION AND SETTLEMENT MONITORING 41247395201	1	LS

▪ MONITOR EXISTING STRUCTURES- VIBRATION MONITORING 41247395201	1	LS
▪ CLEARING & GRUBBING 41247375202	1	LS
▪ CLEARING & GRUBBING 41247395201	1	LS
▪ REMOVAL OF EXISTING CONCRETE PAVEMENT	322	SY
▪ DELIVERY OF SALVAGEABLE MATERIAL TO FDOT 41247375202	1	LS
▪ DELIVERY OF SALVAGEABLE MATERIAL TO FDOT 41247395201	1	LS
▪ REGULAR EXCAVATION	1061	CY
▪ EMBANKMENT	10	CY
▪ TYPE B STABILIZATION	2389	SY
▪ PREPARED SOIL LAYER, FINISH SOIL LAYER, 6	149	SY
▪ REWORKING LIMEROCK BASE, 6	2177	SY
▪ OPTIONAL BASE, BASE GROUP 10	2211	SY
▪ ASPHALT TREATED PERMEABLE BASE	20	CY
▪ MILLING EXIST ASPH PAVT, 2 AVG DEPTH	6210	SY
▪ MILLING EXIST ASPH PAVT, 2 1/2 AVG DEPTH	7456	SY
▪ SUPERPAVE ASPHALTIC CONC, TRAFFIC C	1402	TN
▪ ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-9.5, PG 76-22	876.2	TN
▪ MISCELLANEOUS ASPHALT PAVEMENT	4.5	TN
▪ PLAIN CEMENT CONCRETE PAVEMENT, 10	178	SY
▪ PLAIN CEMENT CONCRETE PAVEMENT, 12	4	SY
▪ REINFORCED CEMENT CONCRETE PAVEMENT, 6	8	SY
▪ CONCRETE CLASS II, CULVERTS	1	CY
▪ CONC CLASS IV, BULKHEAD	6.3	CY
▪ REINFORCING STEEL- MISCELLANEOUS	308	LB
▪ REINFORCING STEEL- BULKHEAD	274	LB
▪ INLETS, CURB, TYPE 9, <10'	6	EA
▪ INLETS, CURB, TYPE 9, J BOT, >10'	1	EA
▪ INLETS, CURB, TYPE 9, PARTIAL	1	EA
▪ INLETS, CURB, TYPE 9, MODIFY	2	EA
▪ INLETS, CURB, TYPE P-3, >10'	1	EA
▪ INLETS, CURB, TYPE P-5, <10'	1	EA
▪ INLETS, CURB, TYPE P-5, >10'	2	EA
▪ INLETS, CURB, TYPE P-6, <10'	3	EA
▪ INLETS, CURB, TYPE P-6, >10'	4	EA
▪ INLETS, CURB, TYPE J-6, <10'	1	EA
▪ INLETS, CURB, TYPE J-6, >10'	1	EA
▪ MANHOLES, P-7, >10'	5	EA
▪ MANHOLES, P-8, <10'	1	EA
▪ MANHOLES, J-7, <10'	2	EA
▪ MANHOLES, J-7, >10'	6	EA
▪ MANHOLES, J-8, PARTIAL	1	EA

▪ DRAINAGE MANHOLES, PROJECT 412473-9-52-02, J-7 6' x 10' WITH ADDITIONAL RISER AND WALL	1	EA
▪ DRAINAGE MANHOLES, PROJECT 412473-9-52-02, J-7 5' x 8.5' WITH ADDITIONAL RISER AND WALL	1	EA
▪ MANHOLE, ADJUST	1	EA
▪ MODIFY EXISTING DRAINAGE STRUCTURE	1	EA
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 12S/CD	24	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 15S/CD	24	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18S/CD	327	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24S/CD	804	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 30S/CD	119	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 42S/CD	9	LF
▪ PIPE CULVERT, OPT MATERIAL, ROUND, 48S/CD	47	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,OTHER-ELIP/ARCH, 15S/CD	37	LF
▪ PIPE CULVERT,OPTIONAL MATERIAL,OTHER-ELIP/ARCH, 18S/CD	22	LF
▪ PIPE CULVERT, OPT MATERIAL, OTHER SHAPE - ELIP/ARCH, 30S/CD	143	LF
▪ FLAP GATES, 0-24	1	EA
▪ FLAP GATES, 37-48	1	EA
▪ FLAP GATES, 49-60	1	EA
▪ TRENCH DRAIN, STANDARD	181	LF
▪ SHEET PILING STEEL, F&I PERMANENT	561	SF
▪ CONCRETE CURB & GUTTER, TYPE F	1805	LF
▪ CONCRETE CURB, TYPE D	36	LF
▪ CONCRETE TRAFFIC SEPARATOR, SPECIAL- VARIABLE WIDTH	119	SY
▪ CONCRETE SIDEWALK AND DRIVEWAYS, 4 THICK	709	SY
▪ CONCRETE SIDEWALK AND DRIVEWAYS, 6 THICK	427	SY
▪ PAVERS, ARCHITECTURAL, SIDEWALK	654	SY
▪ DETECTABLE WARNINGS	450	SF
▪ GUARDRAIL -ROADWAY, GENERAL TL-3	119	LF
▪ GUARDRAIL REMOVAL	124	LF
▪ GUARDRAIL END ANCHORAGE ASSEMBLY/END TREATMENT- PARALLEL	1	EA
▪ CRASH CUSHION	2	EA
▪ PERFORMANCE TURF, SOD	60	SY
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6	2.058	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR INTERCHANGE AND URBAN ISLAND, 8	0.291	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR CROSSWALK AND ROUNDABOUT, 12	1745	LF

▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR DIAGONAL OR CHEVRON, 18	360	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID FOR STOP LINE OR CROSSWALK, 24	1078	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SKIP, 10-30 OR 3-9 SKIP, 6 WIDE	0.483	GM
▪ PAINTED PAVEMENT MARKING, STANDARD, WHITE, 3'-9' SKIP DROP LINE AND APPROACH TO TOLL PLAZA, 12 WIDE,	0.018	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 DOTTED EXTENSION, 6	0.188	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, MESSAGE OR SYMBOL	17	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, ARROWS	38	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6	0.995	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID FOR INTERCHANGE AND URBAN ISLAND, 8	0.166	GM
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID FOR DIAGONAL OR CHEVRON, 18	507	LF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, 2-4 DOTTED GUIDELINE/6-10 DOTTED EXTENSION, 6	0.032	GM
▪ POLLUTION CONTROL STRUCTURE WITH BAFFLE AND FILTER, 6' DIAMETER, PROJECT 412473-9-52-02	1	EA
▪ POLLUTION CONTROL STRUCTURE WITH BAFFLE AND FILTER, 8' DIAMETER, PROJECT 412473-9-52-02	1	EA
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247375201	1	LS
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247375202	1	LS
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247395201	1	LS
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247395202	1	LS
▪ SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	43	AS
▪ SINGLE POST SIGN, F&I GROUND MOUNT, 12-20 SF	1	AS
▪ SINGLE POST SIGN, RELOCATE	2	AS
▪ SINGLE POST SIGN, REMOVE	17	AS
▪ MULTI- POST SIGN, REMOVE	1	AS
▪ SIGN PANEL, FURNISH & INSTALL OVERHEAD MOUNT, 51-100 SF	4	EA
▪ SIGN PANEL, INSTALL, UP TO 12 SF	1	EA
▪ SIGN PANEL, REMOVE, UP TO 12 SF	2	EA
▪ SIGN PANEL, REMOVE, 101-200 SF	3	EA
▪ PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, ISLAND NOSE	7	SF
▪ PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, ISLAND NOSE	10	SF

▪ PAINTED PAVEMENT MARKINGS, FINAL SURFACE 41247375201	1	LS
▪ PAINTED PAVEMENT MARKINGS, FINAL SURFACE 41247395201	1	LS
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 8 FOR INTERCHANGE AND URBAN ISLAND	0.104	GM
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 12 FOR CROSSWALK AND ROUNDABOUT	775	LF
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 18 FOR DIAGONALS AND CHEVRONS	360	LF
▪ THERMOPLASTIC, STANDARD, WHITE, SOLID, 24 FOR STOP LINE AND CROSSWALK	389	LF
▪ THERMOPLASTIC, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 GAP EXTENSION, 6	0.173	GM
▪ THERMOPLASTIC, STANDARD, WHITE, MESSAGE OR SYMBOL	9	EA
▪ THERMOPLASTIC, STANDARD, WHITE, ARROW	35	EA
▪ THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18 FOR DIAGONAL OR CHEVRON	492	LF
▪ THERMOPLASTIC, STANDARD, YELLOW, 2-4 DOTTED GUIDE LINE /6-10 DOTTED EXTENSION LINE, 6	0.002	GM
▪ THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12 FOR CROSSWALK	777	LF
▪ THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24 FOR CROSSWALK	1286	LF
▪ THERMOPLASTIC, PREFORMED, WHITE, MESSAGE	9	EA
▪ THERMOPLASTIC, PREFORMED, WHITE, ARROW	3	EA
▪ THERMOPLASTIC, PREFORMED, MULTI COLOR ROUTE SHIELD	5	EA
▪ THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6	1.402	GM
▪ THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 8	0.187	GM
▪ THERMOPLASTIC, OTHER SURFACES, WHITE, SKIP, 6,10-30 SKIP OR 3-9 LANE DROP	0.483	GM
▪ THERMOPLASTIC, STANDARD-OTHER SURFACES WHITE, SKIP, 12- APPROACH TO TOLL PLAZA OR 3-9 LANE DROP	0.018	GM
▪ THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6	0.42	GM
▪ THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 8	0.141	GM
▪ CONDUIT, FURNISH & INSTALL, OPEN TRENCH	293	LF
▪ CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	450	LF
▪ PULL & SPLICE BOX, F&I, 13 x 24 COVER SIZE	7	EA
▪ LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	3002	LF
▪ LIGHT POLE COMPLETE, F&I, WIND SPEED 150, POLE - 40'	1	EA

▪ LIGHT POLE COMPLETE, REMOVE	2	EA
▪ LOAD CENTER, F&I, SECONDARY VOLTAGE	1	EA
▪ LUMINAIRE, F&I- REPLACE EXISTING LUMINAIRE ON EXISTING POLE/ARM, ROADWAY, COBRA HEAD	3	EA
▪ LUMINAIRE, F&I- REPLACE EXISTING LUMINAIRE ON EXISTING POLE/ARM, ROADWAY, POLE TOP	9	EA
▪ POLE CABLE DISTRIBUTION SYSTEM, CONVENTIONAL	6	EA
▪ LIGHT POLE COMPLETE- SPECIAL DESIGN, F&I, SINGLE ARM SHOULDER MOUNT, ALUMINUM, 30'	5	EA
▪ LIGHT POLE COMPLETE- SPECIAL DESIGN, RELOCATE	1	EA
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247395203	1	LS
▪ CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	1003	LF
▪ SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	1	PI
▪ SIGNAL CABLE- REPAIR/REPLACE/OTHER, FURNISH & INSTALL	1185	LF
▪ SIGNAL CABLE, REMOVE- INTERSECTION	1	PI
▪ PULL & SPLICE BOX, F&I, 13 x 24 COVER SIZE	43	EA
▪ ELECTRICAL POWER SERVICE, F&I, UNDERGROUND, METER PURCHASED BY CONTRACTOR	3	AS
▪ ELECTRICAL POWER SERVICE, REMOVE UNDERGROUND	1	AS
▪ ELECTRICAL SERVICE WIRE, FURNISH & INSTALL	370	LF
▪ ELECTRICAL SERVICE WIRE, REMOVE	450	LF
▪ ELECTRICAL SERVICE DISCONNECT, F&I, POLE MOUNT	2	EA
▪ ELECTRICAL SERVICE DISCONNECT, REMOVE- POLE OR CABINET TO REMAIN	1	EA
▪ PRESTRESSED CONCRETE POLE, F&I, TYPE P-II SERVICE POLE	2	EA
▪ ALUMINUM SIGNALS POLE, PEDESTAL	6	EA
▪ ALUMINUM SIGNALS POLE, RELOCATE	1	EA
▪ ALUMINUM SIGNALS POLE, REMOVE	1	EA
▪ MAST ARM, F&I, WIND SPEED-150, DOUBLE ARM, W/O LUMINAIRE, 36-60	1	EA
▪ MAST ARM, REMOVE SHALLOW FOUNDATION, BOLT ON ATTACHMENT	2	EA
▪ TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 3 SECTION, 1 WAY	8	AS
▪ TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 1 WAY	2	AS
▪ TRAFFIC SIGNAL, REMOVE- POLES TO REMAIN	2	AS
▪ TRAFFIC SIGNAL, RELOCATE- INCLUDES REMOVAL AND REINSTALLATION	2	AS
▪ VEHICULAR SIGNAL AUXILIARIES, REPAIR/REPLACE/RETROFIT- FURNISH & INSTALL, BACKPLATE- BLACK WITH REFLECT BORDER	2	EA
▪ VEHICULAR SIGNAL AUXILLIARIES, FRAME BOX, PROJECT 412473-7-52-02	4	EA

▪ PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	6	AS
▪ PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	2	AS
▪ PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	2	AS
▪ LOOP DETECTOR INDUCTIVE, F&I, TYPE 9	2	EA
▪ LOOP ASSEMBLY- F&I, TYPE A	8	AS
▪ PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	7	EA
▪ PEDESTRIAN DETECTOR, RELOCATE	1	EA
▪ PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	5	EA
▪ TRAFFIC CONTROLLER ASSEMBLY, F&I, 170	1	AS
▪ TRAFFIC CONTROLLER ASSEMBLY, MODIFY	5	AS
▪ TRAFFIC CONTROLLER ASSEMBLY, REMOVE CONTROLLER WITH CABINET	1	AS
▪ SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	1	AS
▪ SINGLE POST SIGN, REMOVE	1	AS
▪ SIGN PANEL, FURNISH & INSTALL GROUND MOUNT, UP TO 12 SF	2	EA
▪ SIGN PANEL, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	9	EA
▪ SIGN PANEL, REMOVE, UP TO 12 SF	5	EA
▪ INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	2	EA
▪ INTERNALLY ILLUMINATED SIGN, RELOCATE	2	EA
▪ SIGN BEACON, F&I GROUND MOUNT- AC POWERED, TWO BEACONS	1	AS
▪ LANDSCAPE COMPLETE- SMALL PLANTS 41247395201	1	LS
▪ LANDSCAPE COMPLETE- LARGE PLANTS 41247375202	1	LS
▪ LANDSCAPE COMPLETE- LARGE PLANTS 41247395201	1	LS
▪ MANHOLE, ADJUST, UTILITIES	10	EA
▪ VALVE BOXES, ADJUST	26	EA
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247375601	1	LS
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247395601	1	LS
▪ INITIAL CONTINGENCY AMOUNT, DO NOT BID 41247395602	1	LS
▪ UTILITY PIPE, F&I, PVC, WATER / SEWER, 5 - 7.9	15	LF
▪ UTILITY PIPE, F&I, PVC, WATER / SEWER, 8 -19.9	273	LF
▪ UTILITY PIPE, F&I, DI/CI, WATER / SEWER, 8 - 19.9	25	LF
▪ UTILITY PIPE, REMOVE & DISPOSE, 8-19.9	295	LF
▪ UTILITY FITTINGS, F&I, DI/CI, ELBOW, 8 - 19.9	4	EA
▪ UTILITY FITTINGS FOR PVC PIPE, FURNISH AND INSTALL, UNION, 10	1	EA

- UTILITY STRUCTURE, BELOW GROUND, F&I, WATER/SEWER, 0 - 80 FT3, 0 - 6'

1	EA
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- UTILITY STRUCTURE, BELOW GROUND, ADJUST/MODIFY

1	EA
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- UTILITY STRUCTURE, BELOW GROUND, REMOVE&DISPOSE CONTRACTOR
 TAKES OWNERSHIP

1	EA
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- UTILITY FIXTURES, F&I, 8.0-19.9, TAPPING SADDLE/SLEEVE

2	EA
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- LIFT STATION, SANITARY SEWER

1	EA
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THE STOUT GROUP, LLC.

EQUIPMENT

EQUIP TYPE	MAINT. CODE	EQUIP CODE	YEAR	MAKE	MODEL	SERIAL NUMBER
Air Compressor	51807	AC-001	2006	Sullair	S185	200601110025
Curb Machine	51832	CM-001		Miller Formless	M1000	attachment: PWC00238
Dozer	51850	D-001	2016	Caterpillar	D5K2LGP	KY200678
Dump Truck	51815	DT-001	1995	Mack	CH612	1M1AA19Y2SW007600
Excavator	51833	E-002	2015	Caterpillar	335FLCR	KNE00410
Excavator	51838	E-003	2015	Komatsu	PC490LC-11	KMTPC251KFWA41139
Excavator - MINI	51849	E-004	2014	Caterpillar	308E2CR	FJX00265
Forklift	51822	FL-001		TCM	FG25N2ST	A21F25207
Loader	51816	L-001	2015	Volvo	L70G	L70G-614526
Loader	51820	L-002	2016	Volvo	L70H	L70H622396
Mobile Excavator	51823	ME-001	2002	Gradall	XL3100	*03133315
Paver	51806	PAV-001	2002	Mauldin	1750 C Crawler	1031
Paver	51840	PAV-002	2010	Mauldin	1750C	402J75TJS6Y202402
Paver	51845	PAV-003	2019	Caterpillar	AP555F	AP500278
Pickup	51801	P-001	2005	Ford	F250	1FTSX21555EA58674
Pickup	51802	P-002	2006	Ford	F250	1FDNF20526EA79500
Pickup	51804	P-003	2015	Chevrolet	Silverado 2500	1GC1KWE86FF197455
Pickup	51825	P-004	2009	Chevrolet	3500 HD CREW CAB	1GCJC73689F178382
Pickup	51826	P-005	2013	Chevrolet	3500 HD FLATBED	1GB3CZC88DF179096
Pickup	51827	P-006	2009	Chevrolet	3500 HD FLATBED	1GBJC74659E131545
Pickup	51842	P-007	2020	GMC	SIERRA 1500	1GTU9EET9LZ261845
Roller	51808	R-001	1998	Caterpillar	CB-214C	9XK00876
Roller	51839	R-002	2012	Caterpillar	CB64	CAT0CB64PDJM00359
Roller	51841	R-003	2008	Caterpillar	CB22	22000120
Roller	51846	R-004	2012	Caterpillar	CB-434D	CATCB434ECNH01302
Roller	51848	R-005	2014	Caterpillar	CS54B	L4H00434
Skid Steer	51809	SS-001	2015	Caterpillar	272DXHP	ETL00553
Skid Steer	51809	SS-001A	2015	Caterpillar	CATBA118C	CEPILLO
Skid Steer	51842	SS-002	2020	Caterpillar	229D3XE	BX901095
Soil Stabilizer	51835	SOIL-001	1995	CMI	RS425 4x4x4	526147
Street Sweeper	51847	STSW-001	2009	Johnston	Conti Street Sweeper	1J9VM4LF19C172071
Tack Sprayer	51819	T-001	2016	Mauldin	MT300	EQ0050842
Trailer	51803	TR-001	2014	Big Tex	14ET-18	16VEX1829E3055053
Trailer	51810	TR-002	2015	Carolina Trailer	25TN Paver Trailer	1C9DP2827G1804034
Trailer	51812	TR-003	2015	Carry-On Trailer	5X8 G	4YMUL0812FG063202
Trailer	51853	TR-004	2020		Asphalt Straightedge	NOVIN0201311849
Truck	51813	TK-001	2006	Ford	F750 XL Reel Truck	3FRXF75P26V347652
Truck	51814	TK-002	1987	Ford	L8000 FUEL&LUBE Truck	1FDYR82A5HVA21899
Truck	51844	TK-003	2011	Ford	F450 XL Mechanics TK	1FD0X4GT3BEA92211
Truck - MOT / Old STSW	51834	TK-004	2002	Sterling	SC8000	49HAADB52DK27440
Truck - Tack	51852	TT-001	2020	Kenworth	Entyre Centennial	2NKHMM7XXLM420599
Van	51829	V-001	2017	Chevrolet	EXPRESS	1GCWGAFHXH1139095
Van	51830	V-002	2017	Chevrolet	EXPRESS	1GCWGAF9H1115855
Van	51831	V-003	2018	Honda	ODYSSEY	5FNRL6H9XJB017928
Water Truck	51805	WT-001	2000	Sterling	L8513 - 2250 Gallon	2FWWWJBAOYAF29252
Water Truck	51818	WT-002	1999	Sterling	A9513 - 2000 Gallon	2FWWJWDB1XAB94044



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
06/03/2021

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

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

PRODUCER GIL, Garden, Avetrani Insurance Group 10689 N. Kendall Drive Suite 208 Miami FL 33176	CONTACT NAME: Alain Bencomo PHONE (A/C, No, Ext): (305) 630-4777 E-MAIL ADDRESS: abencomo@ggaig.com	FAX (A/C, No): (305) 279-3022
	INSURER(S) AFFORDING COVERAGE	
INSURED The Stout Group LLC 10850 NW 138TH Street Bay #3 Hialeah Gardens FL 33018	INSURER A: Greenwich Insurance Company	
	INSURER B: National Union Fire Insurance Co of PA	
	INSURER C: Wesco Insurance Company	
	INSURER D: Federal Insurance Co.	
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** CL2051515976 **REVISION NUMBER:**

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

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO. JECT <input type="checkbox"/> LOC OTHER:		Y	NGL-1000327-01	05/20/2020	07/14/2021	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 Employee Benefits \$ 1,000,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY		Y	NBA-1000328-01	05/20/2020	07/14/2021	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Medical payments \$ 5,000
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$		Y	BE 020434827	05/20/2020	07/14/2021	EACH OCCURRENCE \$ 4,000,000 AGGREGATE \$ 4,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory In NH) If yes, describe under DESCRIPTION OF OPERATIONS below		Y/N N	VVWC3484266	07/14/2020	07/14/2021	<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	Inland Marine			45468715	07/28/2020	07/14/2021	Limit of Insurance \$1,862,756

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

BID "21-11047".
City of Hollywood is named Additional Insured with respects to the General Liability and Auto Liability. Umbrella is written on a follow form.

CERTIFICATE HOLDER City of Hollywood 2600 Hollywood Blvd. Hollywood FL 33020	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

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SECTION 00435

LOCAL PREFERENCE

(EXHIBIT "A")

Pursuant to §38.50 of the City of Hollywood *Code of Ordinances*, the City shall grant a preference to local Hollywood vendors if their initial bid is within 5% of the bid of the lowest responsive responsible bidder that is a non-local Hollywood vendor. The preference shall allow the local Hollywood vendor to submit a second and final offer, which must be at least 1% less than the bid of the lowest responsive responsible non-local Hollywood vendor to be awarded. The local Hollywood vendor shall have the burden of demonstrating that it maintains a permanent place of business with full-time employees within the City limits and has done so for a minimum of one (1) year prior to the date of issuance of a bid or proposal solicitation within Hollywood, Florida. All supporting documentation (e.g. City of Hollywood valid local business tax receipt) for local preference eligibility must be received with the bid package prior to the bid opening date and time.

N/A

SECTION 00495

TRENCH SAFETY FORM

This form must be completed and signed by the Bidder.

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

Bidder 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 Bidder by signing and submitting the bid is, in writing, assuring that it will perform any trench excavation in accordance with applicable trench safety standards. The Bidder 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

Total \$ 1000.00

Bidder acknowledges that this cost is included in the applicable items of the Proposal and in the Grand Total Bid Price. Failure to complete the above will result in the bid being declared non-responsive.

The Bidder is, and the Owner and Engineer are not, responsible to review or assess Bidder'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". Bidder 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".

Elizabeth Ramirez

Witness Signature

Elizabeth Ramirez

Witness Printed Name

12824 SW 133 Terr, Miami

Witness Address

06-10-2021

Date

Jose Maria Sanchez III

Contractor's Signature

Jose Maria Sanchez III

Printed Name

Manager

Title

06-10-2021

Date

- END OF SECTION -

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

THE STOUT GROUP, LLC.

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:

**MISCELLANEOUS DRAINAGE IMPROVEMENTS
Project No.: 21-11047**

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 **One Million Eighty-Four Thousand Seven Hundred and Ten Dollars 00/100 (\$1,084,710.00).**

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 ten percent (10%) 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; provided, however, that after 50 percent (50%) completion of the work covered by this Agreement, (i) the amount retained from each subsequent progress payment shall be reduced to 5 percent (5%) and (ii) upon presentation by the CONTRACTOR of a payment request for up to one-half of the retainage held by the CITY, the CITY shall promptly make payment to the CONTRACTOR. 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 (N/A) | 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.

Article 12. Contract Term: The initial term of this contract shall be for a period of one (1) year beginning upon the notice to proceed. The CITY may renew twice this contract for one (1) additional one (1) year period subject to CITY's option, vendor acceptance, satisfactory performance, and determination that renewal will be in the best interest of the CITY.

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

WHEN THE CONTRACTOR IS A CORPORATION:

Attest:

Secretary

(Correct Name of Corporation)

BY: _____ (SEAL)
President

APPROVED AS TO FORM AND LEGAL
SUFFICIENCY for the use and reliance
of the City of Hollywood, Florida only:

By _____
Douglas R. Gonzales
City Attorney

APPROVED AS TO FINANCE:

By _____
Melissa Cruz
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 **MISCELLANEOUS DRAINAGE IMPROVEMENTS, Project No. 21-11047.**

A copy of said Contract, No. **21-11047**, 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.

Secretary (SEAL)

TO BE EXECUTED BY CORPORATE SURETY

Attest:

(Secretary)

(Corporate Surety)

(Business Address)

By: _____
(Affix Corporate Seal)

(Attorney-In-Fact)

(Name of Local Agency)

(Business Address)

STATE OF FLORIDA

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared, _____ to me well known, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for the _____ and that he has been authorized by _____ to execute the foregoing bond on behalf of the CONTRACTOR named therein in favor of the City of Hollywood, Florida.

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public, State of Florida

My Commission Expires:

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY
for the use and reliance of the
City of Hollywood, Florida only:

APPROVED AS TO FINANCE:

By _____
Douglas R. Gonzales
City Attorney

By _____
Melissa Cruz
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 the **MISCELLANEOUS DRAINAGE IMPROVEMENTS, Project No. 21-11047.**

Which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

THE CONDITION of this bond is that if Principal promptly makes payments to all claimants defined in Section 255.05 (1), F.S., supplying Principal with labor, materials or supplies used directly or indirectly by principal in the prosecution of the work provided for in the Contract, then this bond shall be null and void and of no further force and effect; otherwise to remain in full force and effect.

Said surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or any other changes in or under contract documents and compliance or noncompliance with any formalities connected with the contract does not affect Surety's obligation under this bond and Surety waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or any other changes, compliance, or noncompliance to the terms of the Contract or to the Work or to the Specifications.

This bond is furnished pursuant to the statutory requirements for bond on public works projects being Florida Statute 255.05. Claimants are hereby notified that the Statute 255.05(2) specifically requires that notice be given to Contractor within 45 days after beginning to furnish labor, materials or supplies for the prosecution of the work that claimants intends to look to the bond for protection. Further notice is hereby given claimants that written notice of nonpayment within ninety (90) days after performance of the labor or after complete delivery of the materials or supplies must be delivered to the Contractor and to the Surety. Further notice is hereby given that no action for labor, materials or supplies may be instituted against the Contractor or the Surety on the bond after one year for the performance of the labor or completion of delivery of the materials or supplies.

Without modifying the foregoing, this bond shall be construed as requiring of the principal and surety no more and no less than is specified in F.S. 255.050.

SIGNED AND SEALED, this _____ day of _____, 20____.

PRINCIPAL:

ATTEST:

(Signature)

(Title)

(SEAL)

SURETY:

(Surety)

ATTEST:

(Signature)

(Attorney-in-Fact)

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY
for the use and reliance of the
City of Hollywood, Florida only:

APPROVED AS TO FINANCE:

By _____
Douglas R. Gonzales
City Attorney

By _____
Melissa Cruz
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 a 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 17 of these Contract Documents, consisting of administrative details and written technical descriptions of materials, equipment, standards and workmanship.

SUPPLEMENTARY CONDITIONS - Division 1 of the Contract Specifications incorporating the provisions peculiar to a specific project.

SUBCONTRACTOR - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the work

SURETY - The person, firm or corporation responsible for the Bidder's acts in the execution of the Contract, or which is bound to the CITY with and for the CONTRACTOR to insure performance of the Contract and payment of all obligations pertaining to the work.

WORK - All the work materials or products specified, indicated, shown or contemplated in the Contract Documents to construct and complete the improvement, including all alterations, modifications, amendments or extension thereto made by Change Orders.

ARTICLE 2 - ORGANIZATIONAL ABBREVIATIONS

Abbreviations of organizations which may be used in these Specifications are:

AASHTO: American Association of State Highway and Transportation Officials

ACI: American Concrete Institute

AIA: American Institute of Architects

AISC: American Institute of Steel Construction

AITC: American Institute of Timber Construction

ANSI: American National Standards Institute

APWA: American Public Works Association

ASTM: American Society for Testing and Materials

ASCE: American Society of Civil Engineers

ASME: American Society of Mechanical Engineers

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers

AWPA: American Wood Preservers Association

AWWA: American Water Works Association

AWS: American Welding Society

BCEQCB: Broward County Environmental Quality Control Board

CRSI: Concrete Reinforcing Steel Institute

FDEP: Florida Department of Environmental Protection

FDNR: Florida Department of Natural Resources

FDOT: Florida Department of Transportation

FPL: Florida Power and Light

IEEE: Institute of Electrical and Electronic Engineers

NACE: National Association of Corrosion Engineers

NCPI: National Clay Pipe Institute

NEC: National Electrical Code

NEMA: National Electrical Manufacturers Association
NFPA: National Fire Protection Association
OSHA: Occupational Safety and Health Act
PCI: Prestressed Concrete Institute
SFBC: South Florida Building Code, Broward Edition, Latest Revision
SFWMD: South Florida Water Management District
SSPC: Structural Steel Painting Council
UL: Underwriters' Laboratories, Inc.
UNCLE: Utility Notification Center for Location before Excavation (1-800-432-4770)
USEPA: United States Environmental Protection Agency
USGS: United States Geological Survey
WWEMA: Water and Wastewater Equipment Manufacturers Association

ARTICLE 3 - MISCELLANEOUS PRELIMINARY MATTERS

3.1 Contract Document Discrepancies:

Any discrepancies, conflicts, errors or omissions found in the Contract Documents shall be promptly reported to the ENGINEER who will issue a correction, if necessary, in writing. The CONTRACTOR shall comply with any corrective measures regarding the same as prescribed by the ENGINEER.

3.2 Submissions:

Unless indicated otherwise in the Contract Documents, within seven days subsequent to the CONTRACTOR executing and submitting the required documents of Article 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 01340 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 00800 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, Field Orders, or Change Orders.
- B. Any changes to the terms of the Contract Documents must be contained in a written document, executed by the parties hereto, with the same formality and of equal dignity prior to the initiation of any work reflecting such change.

This section shall not prohibit the issuance of Change Orders executed only by CITY as hereinafter provided.

10.2 Supplemental Instructions - Clarifications:

- A. The CITY, through the ENGINEER, shall have the right to approve and issue Clarifications setting forth written interpretations of the intent of the Contract Documents and ordering minor changes in Work execution, providing the Clarifications involve no change in the Contract Price or the Contract Time.
- B. The ENGINEER shall have the right to approve and issue Clarifications setting forth written orders, instructions, or interpretations concerning the Contract Documents or its performance, provided such Clarifications involve no change in the Contract Price or the Contract Time.

10.3 Field Orders / Change Orders:

- A. Changes in the quantity or character of the Work within the scope of the Project which are not properly the subject of Clarifications, including all changes resulting in changes in the Contract Price or the Contract Time, shall be authorized only by Field Orders or Change Orders approved in advance and issued in accordance with the provisions of the CITY Procurement Code, as amended from time to time.
- B. CONTRACTOR shall not start work on any changes requiring an increase in the Contract Price or the Contract Time until a Field Order or Change Order setting forth the adjustments is approved by the CITY. Upon receipt of a Change Order CONTRACTOR shall promptly proceed with the work set forth within the document.
- C. Field Orders shall be issued for change in Contract Price related to Cost Allowances specifically included on the Proposal Bid Form. Change Orders shall be issued when required for all other Contract Price Changes. Hereinafter, the term "Change Order(s)" shall be used to include "Change Orders" and "Field Orders" with the exception that Field Order shall not be used for any Contract Time adjustments.

- D. In the event satisfactory adjustment cannot be reached for any item requiring a change in the Contract Price or Contract Time, and a Change Order has not been issued, CITY reserves the right at its sole option to either terminate the Contract as it applies to the items in question and make such arrangements as may be deemed necessary to complete the disputed work; or the work shall be performed on the "cost of work" basis as described in Article 10.4.
- E. On approval of any Contract change increasing the Contract Price, CONTRACTOR shall ensure that the performance bond and payment bond are increased so that each reflects the total Contract Price as increased.
- F. Under circumstances determined necessary by CITY, Change Orders may be issued unilaterally by CITY.

10.4 Value of Change Order Work:

- A. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
 - A.1 Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of items involved, subject to the provisions of Article 10.4.G.
 - A.2 By mutual acceptance of a lump sum which CONTRACTOR and CITY acknowledge contains a component for overhead and profit.
 - A.3 On the basis of the "cost of work," determined as provided in this Article, plus a CONTRACTOR's fee for overhead and profit which is determined as provided in Article 10.4.D.
- B. The term "cost of work" means the sum of all direct costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work described in the Change Order. Except as otherwise may be agreed to in writing by CITY, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in Article 10.4.C.
 - B.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the work described in the Change Order under schedules of job classifications agreed upon by CITY and CONTRACTOR. Payroll costs for employees not employed full time on the work covered by the Change Order shall be apportioned on the basis of their time spent on the work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay application thereto. Such employees shall include superintendents and foremen at the site. The expenses

of performing the work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by CITY.

- B.2 Cost of all materials and equipment furnished and incorporated in the work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless CITY deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to CITY. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to CITY and CONTRACTOR shall make provisions so that they may be obtained. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by CITY with the advice of ENGINEER and the costs of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with the terms of said agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the work.
- B.3 Payments made by CONTRACTOR to Subcontractors for work performed by Subcontractors, If required by CITY, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to CITY who will then determine, with the advice of ENGINEER, which bids will be accepted. If the Subcontract provides that the Subcontractor is to be paid on the basis of cost of the work plus a fee, the Subcontractor's cost of the work shall be determined in the same manner as CONTRACTOR'S cost of the work. All Subcontractors shall be subject to the other provisions of the Contract Documents insofar as applicable.
- B.4 Cost of special engineers, including, but not limited to, engineers, architects, testing laboratories, and surveyors employed for services specifically related to the performance of the work described in the Change Order.
- B.5 Supplemental costs including the following:
The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the work except for local travel to and from the site of the work.

Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the work, and cost less market value of such items used but not consumed which remains the property of CONTRACTOR.

Sales, use, or similar taxes related to the work, and for which CONTRACTOR is liable, imposed by any governmental authority. Deposits lost for causes other than CONTRACTOR's negligence; royalty payments and fees for permits and licenses. The cost of utilities, fuel and sanitary facilities at the site. Receipted minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the work.

Cost of premiums for additional bonds and insurance required because of changes in the work.

C. The term "cost of the work" shall not include any of the following:

C.1 Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in its principal or a branch office for general administration of the work and not specifically included in the agreed-upon schedule of job classifications referred to in this Article, all of which are to be considered administrative costs covered by CONTRACTOR's fee.

C.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

C.3 Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the work and charges against CONTRACTOR for delinquent payments.

C.4 Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same, except for additional bonds and insurance required because of changes in the work.

C.5 Costs due to the negligence or neglect of CONTRACTOR, any Subcontractors, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

C.6 Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in this Section.

D. CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

D.1 A mutually acceptable fixed fee or if none can be agreed upon,

D.2 A fee based on the following percentages of the various portions of the cost of the work:

For costs incurred under Article 10.4.B.1, CONTRACTOR's fee shall not exceed ten percent (10%).

For costs incurred under Article 10.4.B.3 and B.4, CONTRACTOR's fee shall not exceed seven and one half percent (7.5%); and if a subcontract is on the basis of

cost of the work plus a fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall not exceed ten percent (10%);

No fee shall be payable on the basis of costs itemized under Article 10.4.B.5 and Article 10.4.C.

- E. The amount of credit to be allowed by CONTRACTOR to CITY for any such change which results in a net decrease in cost, will be the amount of the actual net decrease. When both additions and credits are involved in anyone change, the combined overhead and profit shall be figured on the basis of the net increase, if any, however, CONTRACTOR shall not be entitled to claim lost profits for any Work not performed.
- F. Whenever the cost of any work is to be determined pursuant to Articles 10.4.B and 10.4.C, CONTRACTOR will submit in a form acceptable to CONSUL T ANT 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 Chance 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 can not be foreseen at the time of advertising for bids, adjustments of the Plans to field conditions will be necessary during construction; and, therefore, such changes in the plans shall be recognized as constituting a normal and accepted margin of adjustment not unusual and not involving or permitting any change or modification of unit prices, in which case payment will be made for the revised quantities at the unit price bid in the Proposal.

13.5 Application for Progress Payment:

On the 20th day of the month or the first working day thereafter, the CONTRACTOR shall submit to the ENGINEER for review an Application for Payment form filled out and signed by the CONTRACTOR. The form shall be notarized, and shall cover the work completed as of the date of the application. The Application for Payment shall be accompanied by a Schedule of Values, and any other supporting documentation as the ENGINEER may reasonably require.

13.6 Payment for Materials:

If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to the ENGINEER, as will establish the CITY's title to the material and equipment and protect the CITY's interest therein, including applicable insurance.

13.7 Affidavit Required:

All Applications for Payment shall include an Affidavit of the CONTRACTOR stating that all previous progress payments received on account of the work have been applied to discharge in full all of CONTRACTOR's obligations reflected in prior Applications for Payment. The amount of retainage with respect to progress payments will be 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	00800-8
13. Owner's Contingency	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:

<u>Major Milestones</u>	<u>Completion Time (calendar days)</u>
1. Substantial Completion ⁽¹⁾	180
2. Project Closeout ⁽²⁾	30

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.

⁽¹⁾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:
 - Completion of all construction work associated with the specific “Major Milestone” listed in the construction work schedule including completion of punch list items. “Completion of punch list items” shall be as determined by the Engineer in the field.
 - The lift station shall be tested and demonstrated for the Engineer’s acceptance. Please refer to the Specification Division 15 Mechanical, for the testing requirements. 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.

⁽²⁾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)

The Contractor shall be required to purchase and maintain, throughout the life of the contract, and until the project is accepted by the City, Builder's Risk Insurance on an All Risk of Loss form. Coverage shall include:

Theft	Aircraft
Windstorm	Vehicles
Hail	Smoke
Explosion	Fire
Riot	Collapse
Civil Commotion	Flood

The policy limits shall be no less than the amount of the finished project and coverage shall be provided on a completed value basis.

Property located on the construction premises, which is intended to become a permanent part of the building, shall be included as property covered.

The policy shall be endorsed permitting the City to occupy the building prior to completion without effecting the coverage.

The City of Hollywood shall be named as Additional Insured and Loss Payee.

2. GENERAL LIABILITY (GL3):

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

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

The minimum limits acceptable shall be:

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

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.

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	180	\$1,000/day
2. Project Closeout	30	\$1,000/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 right-of-ways indicated.

5. Existing Facilities and Structures

All existing facilities shall be protected, and if damaged, shall be repaired by the CONTRACTOR at no additional cost to the CITY.

6. Explosives

Explosives shall not be used on this project.

7. Contract Documents

The CITY will provide the CONTRACTOR with 1 (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 COTNRACOTR shall pay for inspection services per Article 3.15, no exceptions.

Similarly, holiday and other overtime work shall be requested a minimum of 36-hours in advance and CITY will provide inspection for all overtime.

- B. Exceptions to the hours and days of the week for work and other related limitations are allowed only for tie-ins during low flow periods / early morning hours, coatings that need to be applied during lower temperature times of the day and whenever the Documents specifically define that work shall be completed outside of the limitations for "normal" work hours, days, etc.

Inspection for tie-ins during low flow/early morning and specialty coating application performed during nighttime will not be cause for extra inspection costs unless such work is remedial in nature as a result of defective work.

12. Retainage

After 50-percent completion of the construction services purchased pursuant to this contract, CONTRACTOR may present to CITY a payment request for one-half of the retainage then held by CITY. CITY shall promptly make payment to CONTRACTOR, unless CITY has grounds for withholding the payment of retainage. CITY shall have grounds for withholding the payment of retainage with respect to any amounts that are the subject of a good-faith dispute, the subject of a claim brought pursuant to Florida Statute Section 255.05, or otherwise the subject of a claim or demand by CITY or CONTRACTOR.

At acceptance of Substantial Completion, CITY shall promptly make payment to CONTRACTOR of one-half of the retainage then held by CITY. At acceptance of completion of all punch list items, CITY shall promptly make payment to CONTRACTOR the balance of retainage then held by CITY.

13. Owner's Contingency

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: MISCELLANEOUS DRAINAGE IMPROVEMENTS (PROJECT 21-11047)
ENGINEER: Engineering Construction Services Division

TO: **CONTRACTOR:**

CONTRACT FOR:

NOTICE TO PROCEED DATE:

DATE OF ISSUANCE:

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

Portions of the work performed under this Contract as described above, have been reviewed and found to be substantially complete. The Date of Substantial Completion of Project or designated portion thereof designated above is hereby established as _____ which is also the date of commencement of applicable warranties required by the Contract Documents for the noted area.

DEFINITION OF DATE OF SUBSTANTIAL COMPLETION

The Date of Substantial Completion of the work or designated portion thereof is the date certified by the ENGINEER ("Date of Issuance" above) when construction is sufficiently complete, in accordance with the Contract Documents, so the CITY can occupy or utilize the work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the CONTRACTOR and verified and amended by the ENGINEER, for the above referenced "Project or Designated Portion" is attached to this form (attached "Punch List" dated _____).

The failure to include any items on such list does not alter the responsibility of the CONTRACTOR to complete all work in accordance with the Contract Documents.

CERTIFICATE OF SUBSTANTIAL COMPLETION

Please note that in accordance with Article 14 General Conditions, the Contractor retains full responsibility for the satisfactory completion of all work regardless of whether the Owner occupies and / or operates a part of the facility and that the taking possession and use of such work shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents.

City of Hollywood ECSD

ENGINEER

BY

DATE

CONTRACTOR

BY

DATE

The CITY OF HOLLYWOOD, through the City's authorized representative, accepts the work or designated portion thereof as substantially complete and will assume full possession thereof at _____(time) on _____
(date).

BY

DATE

- END OF SECTION -

SECTION 00900

ADDENDA

(Addenda are attached.)



**CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION SERVICES DIVISION**

1621 N. 14th Avenue
Hollywood, FL 33022
Phone (954) 921-3930 Fax (954) 921-3258

ADDENDUM NUMBER 1

Date: **May 27, 2021**

FOR: **Miscellaneous Drainage Project Improvements**
PROJECT NUMBER: **21-11047**

ALL BIDDERS BE ADVISED OF THE FOLLOWING CHANGES TO THE ABOVE REFERENCED PROJECT AS LISTED BELOW:

This addendum is issued as part of the Bidding Documents for the above described project. The changes incorporated in this addendum shall be considered as a part of the documents and shall supersede, amend, add to, clarify, or subtract from those conditions shown in the original documents dated May 11, 2021. The bidder shall coordinate all modifications herein with all trades and disciplines related to the work. The Bidder is acknowledging the receipt of this addendum by submitting his BID

- Item 1: Pre-Bid Meeting Attendance Record**
See attached pre-bid meeting attendance record.
- Item 2: Pre-Bid Meeting Minutes**
See attached pre-bid meeting minutes.
- Item 3: Revised Addendum 1 Contract– Section 00500**
Added Article 12

Article 12. Contract Term: The initial term of this contract shall be for a period of one (1) year beginning upon the notice to proceed. The CITY may renew twice this contract for one (1) additional one (1) year period subject to CITY's option, vendor acceptance, satisfactory performance, and determination that renewal will be in the best interest of the CITY.

The Contract – Section 00500 was revised and is attached.



**CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING & CONSTRUCTION SERVICES DIVISION**

1621 N. 14th Avenue
Hollywood, FL 33022
Phone (954) 921-3930 Fax (954) 921-3258

ADDENDUM NUMBER 1

Item 4: Response to Questions

Question 1: What is the anticipated budget for this project?

Response: The budget for this project is included in the multiple Miscellaneous Drainage Improvements Projects Budget and there is not a specific budget for this specific project's tasks.

Question 2: What are the diameters and lengths of the solid pipes along N 65 Ave?

Response: The diameter is typically 18" along N 65 Ave. The Lengths totals for each diameter are indicated in the Proposal Bid Form – Section 00301 for this BID. All Bidders shall use the same quantities indicated in this Form to determine the Base Bid Total to Complete this Project.

Items 18, 19 and 20 will be the same amounts for all Bidders and shall be added to the other items to determine the Base Bid Total

Question 3: What is the Liquidated Damages in this project?

Response: The Liquidated Damages are indicated on Section 00800 – Supplementary General Conditions as \$1,000.00/day.

ALL OTHER TERMS, CONDITIONS AND SPECIFICATIONS SHALL REMAIN THE SAME.

THIS ADDENDUM SHALL BE ATTACHED TO THE CONTRACT DOCUMENTS AND THE RECEIPT OF THE SAME SHALL BE NOTED IN THE PROPOSAL IN THE SPACE PROVIDED.

Clece Aurelus, P.E.
Engineering Support Services Manager
Department of Public Utilities - ECSD



CITY OF HOLLYWOOD
DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING AND CONSTRUCTION SERVICES DIVISION (ECSD)

Project Name: **Miscellaneous Drainage Improvements** Project No.: **19-11047**
 Project Manager: **Raul Wainer, P.E.** Date: **May 18, 2021**

Pre-Bid Meeting Attendance Record

No.	Firm Name & Address (Street Address)	Name of Individual Recipient Telephone No., Fax No., and Email Address of Firm	Name and Signature
1	ROCK POWER PAVING 13831 SW 59 ST MIAMI FL	MARCO GARCIA - MENOCA marco@rockpowerpaving.com	MARCO GARCIA - MENOCA <i>[Signature]</i>
2	RG Underground Engineering INC 14375 SW 120 Street, unit #104 Miami, FL 33186.	Phone: (305) 386 6293 Email: office@underground.com	Ohara E. Leon <i>[Signature]</i>
3	Southeastern Engineering Architects 911 New 209 Ave Suite 101 Pembroke Pines FL 33029	José C Perella 305 557 4226 jc@southeasterneng.com	José C Perella <i>[Signature]</i>
4	Hinterland Group 7051 W. Blue Heron Blvd Riviera Beach, FL 33404	Chuck Emering 561-640-3503 T 561-640-3504 info@hinterlandgroup.com	Chuck Emering <i>[Signature]</i>
5	The Stout Group, LLC 10850 NW 138 St Bay #3 Hialeah Gardens, FL 33018	José Maria Sanchez III 786-452-1481 305-397-2311 jsanchez@hrestoutgroup.com	Roberto Fruto <i>[Signature]</i>



CITY OF HOLLYWOOD
Department of Public Utilities
Engineering & Construction Services Division

ADDENDUM I

Miscellaneous Drainage Project Improvements

Project No. 21-11047
Pre-Bid Meeting Minutes

May 18, 2021 at 2:00 PM

1. Introduction:

The City of Hollywood is accepting Bids for the Miscellaneous Drainage Project Improvements indicated in the scope of the work for this project. The Public Utilities Department, Engineering and Construction Services Division (ECSD) will provide the overall contract and construction administration of this project.

All attendees signed the sign-in sheet.

Raul Wainer, ECSD Project Manager (954-921-3930) – rwainer@hollywoodfl.org

2. Scope of Project:

Drawings for two (2) major areas have been provided and include:

- 1- N 65 Ave, from N 65th Ave from McClellan St to Cluster St, including the side streets indicated on plan for these project limits – Installation of new drainage System
- 2- Harrison, Johnson and Michigan A1A East Side Streets – Replacement of existing drainage components, including plugging and replacement of Drainage Structures (Catch Basins)

The site, civil, drainage work to be performed includes furnishing and installing Catch Basin Structures with Baffle, Frame and Grate, Solid Pipes, Plugs, French Drains and site restoration for the installation of various drainage systems of various sizes at different locations in the City of Hollywood. The site restoration includes preliminary asphalt in accordance with the pavement restoration detail with milling and resurfacing of the entire lane, and pavement markings restoration. Work is to be as shown on the Contract Specifications, Contract Drawings and as described on the Proposal Bid Form (Section 00301) and on the Basis of Payment (Section 01025). As a clarification, the removal of existing drainage structures and pipes where new catch basins are proposed is to be considered as included in the Clearing and Grubbing scope. All Maintenance of Traffic (MOT), dewatering restoration, as-built and any incidental related work as soft digging is to be included in the bid price. Quantities provided in the Proposal Bid Form (Section 00301) are approximate only; Bid line items' unit costs will apply to actual field measured amount of work. Bidders are required to provide the unit prices for each and all line items; failure to provide the line items information shall render the entire bid package non-responsive.

The City Of Hollywood will evaluate the Bid Proposals and Determine the Lowest, Responsive Bidder for the Base Bid Total (Items 1 through 21). It Is the City of Hollywood's Intent to award the project based upon the Base Bid Total. However, The City may decide to include the Alternate Unit Price Bid Items for the calculation of the Total Base Bid.

3. Proposal Bid Form - Line items 3 through 17:

Furnish and install Catch Basin Structures, Baffles, Frame and Grate, French Drains, Solid Pipes, Plugs: these items shall be for the payment of actual field-measured quantity and the unit price shall include all labor, equipment and material for all work necessary and required for the fabrication and installation of the drainage structure components (as shown in the Contract Drawings and Specifications), and site restoration.

Traffic control measures to be included in the price stipulated for all the unit pay items listed under this contract shall include standard traffic cones and up to 10 barricades and 10 advance warning and/or detour signs. No separate payment shall be made for such traffic control measures. The contractor shall advise the owner in advance in the event that additional measures are deemed necessary.

4. Bidding Document Submittal Description:

BID PACKAGE CONTENTS AND REQUIREMENTS
(submit 1 original and two copies of this complete package)

SECTION	TITLE
00200	Cone of Silence
00300	Proposal
00301	Proposal Bid Form
00410	Approved Bid Bond
00420	Information Required from Bidders
00435	Local Preference
00495	Trench Safety Form

5. General Comments:

- Upon receipt of any work order, the contractor shall evaluate the work site and determine whether any foreseeable item of expense is not covered by a pay item under this contract, the contractor shall notify the owner of this fact prior to initiation of the associated work and shall await authorization to proceed. In the event that no such prior notification is made and no such prior authorization is received, the contractor will not be paid for the expense(s) in question. No after-the fact change orders will be considered or approved.
- Answers to technical questions, minutes for the pre-bid conference, etc. will be addressed in writing via addendum.
- Bids must be received at the City Clerk's Office (2600 Hollywood Blvd., Room 221 Hollywood, Fl. 33020) **no later than Thursday, June 10 at 2:00 p.m.** and are

scheduled to be opened publicly in the Department of Public Utilities, ECSD Conference Room at 1621 North 14th Avenue, Building A, Hollywood, FL on **Thursday, June 10 by 2.30 p.m.**

6. Key Concerns:

- Coordination with the City (ECSD) project managers and with other contractors
- Maintenance of Traffic: Contractor's responsibility if required
- Project Working Hours: 7:30 AM to 4:00 PM, Monday to Friday. Advance Approval is required for work outside standard hours.
- Nearby Residents: Notification of the residents is required prior to work on site
- Permitting: Contractor's responsibility if required

7. Completion Time:

Substantial Completion: **180 calendar days**

8. Contractor Questions / Comments:

- a. **Questions** should be emailed to rwainer@hollywoodfl.org no later than 2.00 PM on May 25, 2021.
- b. **Responses** will be provided with the publication of the Addendum I, scheduled for no later than COB on May 31, 2021

9. Site Inspection: N/A

ADDENDUM 1

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

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:

MISCELLANEOUS DRAINAGE IMPROVEMENTS
Project No.: 21-11047

Article 2. The Contract Sum: The CITY shall pay to the CONTRACTOR, for the faithful performance of the Contract, in lawful money of the United States of America, and subject to additions and deductions as provided in the Contract Documents, as follows:

Based upon the prices shown in the Proposal heretofore submitted to the CITY by the CONTRACTOR, a copy of said Proposal being a part of these Contract Documents, the aggregate amount of this Contract being the sum of _____.

Article 3. Partial and Final Payments: In accordance with the provisions fully set forth in the "General Conditions" of the "Specifications", and subject to additions and deductions as provided, the CITY shall pay the CONTRACTOR as follows:

- (a) On the 15th day, or the first business day thereafter, of each calendar month, the CITY shall make partial payments to the CONTRACTOR on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the CONTRACTOR, less ten percent (10%) 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; provided, however, that after 50 percent (50%) completion of the work covered by this Agreement, (i) the amount retained from each subsequent progress payment shall be reduced to 5 percent (5%) and (ii) upon presentation by the CONTRACTOR of a payment request for up to one-half of the retainage held by the CITY, the CITY shall promptly make payment to the CONTRACTOR. 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 (N/A) | 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.

Article 12. Contract Term: The initial term of this contract shall be for a period of one (1) year beginning upon the notice to proceed. The CITY may renew twice this contract for one (1) additional one (1) year period subject to CITY's option, vendor acceptance, satisfactory performance, and determination that renewal will be in the best interest of the CITY.

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

WHEN THE CONTRACTOR IS A CORPORATION:

Attest:

Secretary

(Correct Name of Corporation)

BY: _____ (SEAL)
President

APPROVED AS TO FORM AND LEGAL
SUFFICIENCY for the use and reliance
of the City of Hollywood, Florida only:

By _____
Douglas R. Gonzales
City Attorney

APPROVED AS TO FINANCE:

By _____
Melissa Cruz
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 -

DIVISION 1
GENERAL REQUIREMENTS

SECTION 01010

SUMMARY OF WORK

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. The work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract documents which may be necessary for the complete and proper construction of the work in good faith shall be performed, furnished, and installed by the CONTRACTOR as though originally so specified or shown, at no increase in cost to the CITY.
- B. Prior to construction, the CONTRACTOR shall verify existing utilities identified on the Drawings and locate other potential utilities in their working area may not 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. The site, civil, drainage work to be performed includes furnishing and installing Catch Basin Structures with Baffle, Frame and Grate, Solid Pipes, Plugs, French Drains and site restoration for the installation of various drainage systems of various sizes at different locations in the City of Hollywood. The site restoration includes preliminary asphalt in accordance with the pavement restoration detail with milling and resurfacing of the entire lane, and pavement markings restoration. **Work is to be as shown on the Contract Specifications, Contract Drawings and as described on the bid form (Section 00300) and on the Basis of Payment (Section 01025). Removal of existing drainage structures and pipes where new catch basins are proposed is included in the Clearing and Grubbing scope. All MOT, dewatering, restoration, as-built and any incidental related work is to be included in the bid price.**
- B. 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 providing 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 dewatering activities directly to bodies of water is not permitted.
- C. It is the intent of the CITY to obtain complete and working installations 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.

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 contractor 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 LOCATION OF THE PROJECT

- A. The project is located in South 24th Ave and in the Alley between Hollywood Boulevard and Van Buren Street, East and West of South 24th. Ave in the City of Hollywood, as shown in the Contract Drawings.

1.05 CONTRACT DRAWINGS

- A. The work to be performed is shown on the Contract Drawings set and Exhibits included in the Appendix.

1.06 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.

1.07 DRAWINGS OF EXISTING FACILITIES

- A. Where available, drawings of the existing facilities may be inspected at the City's Engineering and Construction Services Office. These drawings are for information only and are not a part of the Contract Documents. In making these drawings available for inspection, the CITY makes no guarantee, either expressed or implied, as to their accuracy or completeness.
- B. The CONTRACTOR shall contact representatives for other utilities, facilities in proximity of the work and Sunshine State One Call Inc., to obtain the as-built information from them directly. The utilities shown on Drawings are based upon available records supplied from various sources. The CITY makes no guarantee, either expressed or implied, as to their accuracy or completeness.

1.08 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.

1.09 FIELD LAYOUT OF WORK

- A. All work under this Contract shall be constructed in accordance with the Contract Drawings or as directed by the ENGINEER. Elevations of existing ground, structures and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake-out survey shall be referred immediately to the ENGINEER for interpretation or correction.
- B. All survey work for construction control and as-built preparation purposes shall be made by the CONTRACTOR at his expense. It is acceptable to use elevations and offsets from facilities shown on the provided surveys as control for as-built preparation purposes.
 - 1) Provide as-built in CAD format to incorporate into our GIS database
 - 2) Provide the Surveyor Elevation Data in text format for the relevant drainage structures elevations: unique ID, X-Coordinate, Y-Coordinate, Elevation, collected feature code, and collected feature description to incorporate into our GIS database
- C. The CONTRACTOR shall establish all base lines for the location of the principal component parts of the work together with benchmarks and batter boards adjacent to the work. Based upon the information provided by the Contract Drawings, the CONTRACTOR shall develop and make all detail surveys necessary for construction. The CITY will furnish information and location of existing benchmarks.
- D. The CONTRACTOR shall have the responsibility to carefully preserve the benchmarks, reference points and stakes. In case of destruction thereof by the CONTRACTOR or resulting from his negligence, he shall be held liable for any expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.
- E. Existing or new control points, property markers, and monuments that will be established or are destroyed during the normal causes of construction shall be re-established by the CONTRACTOR; and all reference ties recorded therefore shall be furnished to the ENGINEER. All computations necessary to establish the exact position of the work shall be made and preserved by the CONTRACTOR.
- F. The ENGINEER may check all or any portion of the work, and the CONTRACTOR shall afford all necessary assistance to the ENGINEER in carrying out such checks. Any necessary corrections to the work shall be performed immediately by the CONTRACTOR and he shall accept all responsibility for the accuracy and completeness of his work.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

SECTION 01025

BASIS OF PAYMENT

PART 1 -- GENERAL

1.01 GENERAL

- A. Payments to the CONTRACTOR shall be made on the basis of the Proposal bid items 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 all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, 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. 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 where used will be applied to the actual quantities furnished and installed in conformance with the Contract Documents.
- C. The CONTRACTOR'S attention is called to the fact that the quotations for the various items of work are intended to establish a total price for completing the work in its entirety. 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.
- D. The CONTRACTOR shall submit, with each Payment Request, a list of Subcontractors that he is or will be utilizing for his contract. For each Subcontractor, the following information shall be provided:
 - 1. Total sub-contract dollar amount.
 - 2. Amount paid to date.

1.02 MEASUREMENT

- A. 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 CONTRACTOR shall witness all field measurements.

1.03 PAYMENT ITEMS

For purposes of describing items appearing in the Bid Schedule, pricing for each item shall include work and components described below:

- A. **Item No.1. Mobilization:** The lump sum price bid 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, shop drawings submittals and others, temporary facilities and offices, safety equipment and first aid supplies, project signs, field surveys, sanitary and other facilities required by the specifications, audio-video documentation of the existing site, any space required for staging, laydown, survey, storage, parking, etc., and all other activities necessary for complete mobilization/demobilization requirement for the contract. The payment items for mobilization shall not exceed 3% of the sum of Bid Items No. 2 through 16.
- B. **Item No. 2. Maintenance of Traffic (MOT):** lump sum price bid for this item shall be payment for all labor for the design and preparation of signed and sealed MOT plans, permitting, furnishing and installation of traffic control devices throughout the project extents and duration including, but not limited to: flagmen, barricades, lane closures/detours, closure notifications to City as well as residents, message boards, etc.

The following Notes are applicable to the Bid Payment Items No. 3 to 17 General Basis of Payments Requirements:

These items shall be for the payment of actual field-measured quantity and the unit price shall include all labor, equipment and material for all work necessary and required for the fabrication and installation of this drainage system component (as shown in the Contract Drawings and Specifications), and temporary site restoration. This work shall include, but not be limited to exploratory excavation (soft-digs), preparation and submittal of shop drawings, preparation of a certified stormwater pollution prevention plan, installing/implementing stormwater pollution prevention systems and turbidity control Best Management Practices trench excavation (including sheeting, shoring, bracing, dewatering (including dewatering permit applications preparation, fees, submittal and approval of dewatering plan by jurisdictional agencies and Engineer, installing dewatering system, disposal of groundwater, permit required sampling and analysis, and all necessary accessories required for a complete installation and operation of a dewatering system, if required), tree and shrub protection, tree removal, landscape trimming, signage protection, signage removal and replacement, trench excavation (including exploratory excavation), sheeting, shoring, bracing, dewatering (if needed), clearing and grubbing, location and protection of all existing utilities, excavation, shoring, cutting, removal and disposal of existing pavement, sidewalk, trees and drainage lines and structures being replaced as shown on plans or as necessary.

These items shall also include furnishing and installing catch basin structure (with baffles, frame and grate), French Drains, Solid Pipes, Plugs, including underlying rock, backfill, removal and disposal of unsuitable material, disposal of excess fill material, clean fill; demolition including removal and disposal of existing feature as pavement, sidewalk, trees and drainage lines and structures being removed or replaced as shown on plans or as necessary, disposal of removed or damaged items, site restoration, including but not limited to: pavement, sod (new sod must be consistent with the existing sod to be replaced, watering schedule as required for the first month), curb, sidewalk (full flag), landscaping, fences, walls, benches, irrigation systems, lighting, utilities, and any other features or areas damaged due to the construction. These pay items also include, but not limited to: compliance with the Trench Safety Act, and the trench restoration per City's detail G-1, with the application of Tack Coat to the clean surface at a rate of 0.1 to 0.2 gallons per sq. yd. prior to 2" SP-9.5 temporary asphalt patch restoration per City's detail G-2. As-built survey documentation in hardcopy and electronic form (PDF and Autocad) following specification 01701.

Item 17 for replacing the Signing and Pavement Markings are included for the areas of these items shall be for the payment of all labor, material, equipment, tasks, testing, procedures, preparation and appurtenances necessary for replacing all previously 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, included the entire project.

- C. **Item No. 3 and 4. Furnish and Install Catch Basin Concrete Structures, Baffles, Frame and Grate:** All structures are to meet or exceed the requirements of ASTM C-478 and the Precast Concrete Structures Association of Florida. This item includes the connection of new and existing pipes (solid pipe or French Drains) to the drainage structure as indicated on plans. Baffles shall installed for French Drain Inlets. Shop Drawings shall be prepared after exploratory excavation (soft digs). Alternatively, contractor may choose at his own expense, to core drill the new Catch Basin Structure for unforeseen field-adjustments and plug as needed.
- D. **Item No. 5 to 8. Furnish and install Solid Pipe (15", 18", 24", and 30"):** This item includes the removal and disposal as shown on plans, the watertight connection of the new Solid Pipe to the new or existing Drainage Structures as indicated on plans. All Solid Pipes for this project shall be PVC A-2000 pipes, unless otherwise noted on the plans.
- E. **Item No. 9. Furnish and install French Drain (18"):** This item includes the removal and disposal as shown on plans, watertight connection of the new French Drain to the Drainage Structures as indicated on plans. This item includes the connection of the French Drain to the new or existing Drainage Structures as indicated on plans. All French Drain pipes for this project shall be PVC A-2000 perforated pipes, unless otherwise noted on the plans.
- F. **Item No. 10. Replace PVC A-2000 15" Diam. Pipe and Connect to the Existing Structures:** This item includes the removal and disposal of existing pipe as shown on plans or sketches, watertight connection of the new pipe to the Drainage Structures as indicated on plans. This item includes the connection of the French Drain to the new or existing Drainage Structures as indicated on plans. All Solid pipes for this project shall be PVC A-2000 pipes, unless otherwise noted on the plans.
- G. **Item No. 11. Replace Existing 36" Diam. Drainage Structure. Connect to Two (2) Existing 30" Diam. Pipes:** This item includes the removal and disposal of the existing Drainage Structure, furnish and installation of the new Structure with watertight connection to the existing Drainage Pipes as indicated on plans.
- H. **Item No. 12. Replace Existing 36" x 36" Drainage Structure. Connect to Two (2) Existing 30" Diam. Pipes:** This item includes the removal and disposal of the existing Drainage Structure, furnish and installation of the new Structure with watertight connection to the existing Drainage Pipes as indicated on plans.
- I. **Item No. 13. Disconnect and Plug Existing Structure:** This item includes the removal and disposal of the existing Drainage (Brick) Plug to be replaced.
- J. **Item No. 14. Regrade Swale:** this items shall be re-grading of swales and installation of Bahia Sod per detail and at location shown on plans. Watering as needed for 30-days.

- K. **Item No. 15. Milling and Resurfacing (includes regrading with first 1" and second 1" lift):** This item is for all labor, material, equipment, tasks, testing, procedures, preparation and appurtenances, necessary for milling of existing asphaltic concrete surface course (nominal 2-inch thick) for permanent SP-9.5 asphalt pavement repairs within area outside of the restored utility trenches as shown on plans, will be paid for at the unit price bid times the number of square yards (SY) of such surface course milled as required, measured within the limits defined above and by the Pavement &, and as approved by the Engineer. Greater widths are at Contractor's option and expense. The price bid shall be full compensation for saw-cutting, furnishing all materials, labor and equipment required. Asphalt cold milling shall be performed using an automated pavement planer capable of maintaining an accurate depth. Cold milling equipment shall meet the approval of the Engineer and the governing agency having jurisdiction at the location of the pavement milling operation. Permanent Pavement Resurfacing (first and final lift): For all labor, material, equipment, tasks, testing, procedures, preparation and appurtenances, necessary for installation of 1-inch thick (final lift) machine laid asphaltic concrete (SP-9.5) surface course for permanent pavement installation over the area within the Right of Way (including driveways and area outside of it) shown on the approved plans, 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 of the NE 65 Ave project. 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. It includes the 2 (two) 1" lifts of SP-9.5 described for the resurfacing. Application of Tack Coat to the clean surface at a rate of 0.1 to 0.2 gallons per sq. yd. prior to 1" SP-9.5 asphalt application and Temporary Signing and Pavement Markings are included for the areas of this item.
- L. **Item No. 16. Pavement Overlay (includes regrading with first 1"):** This item includes regrading as needed and resurfacing 1" of the entire lane..
Permanent Pavement Resurfacing: For all labor, material, equipment, tasks, testing, procedures, preparation and appurtenances necessary, for installation of leveling course and the constructing 1-inch thick (minimum) machine laid asphaltic concrete (SP-9.5) surface course for permanent pavement installation over the pavement area shown on plans. Bid area includes all lanes and asphalt areas of pavement indicated on plans and by a minimum of 12-ft wide area along the 1" of SP-9.5 at trench restoration when not specifically indicated on plans. 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 the Contract Plan, Agreement and Bid Package. Permanent paving repairs will be in addition to the required flexible pavement restoration along the pipeline installation. Application of Tack Coat to the clean surface at a rate of 0.1 to 0.2 gallons per sq. yd. prior to 1" SP-9.5 asphalt application and Temporary Signing and Pavement Markings are included for the areas of this item.

- M. **Item No. 17. Pavement Markings, Traffic Signs, and Reflective Pavement Markers:** This item shall be for the payment of all labor, material, equipment, tasks, testing, procedures, preparation and appurtenances necessary for replacing all previously existing thermoplastic or painted pavement markings with thermoplastic pavement markings, messages, traffic signs, and reflective pavement markers within 10' of the project limits (in accordance with the the Broward County Traffic and Engineering Department (BCTED) standards.
- N. **Item No. 18. Undefined Owner's Conditions 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. 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.
- O. **Item No. 19. Permit, Licenses, Tests, Fees Allowance:** The allowance indicated for this item is to pay for all permits, licenses, material testing fees and any necessary franchise utility charges required of the CONTRACTOR from the various agencies having jurisdiction for construction of the project. The allowance shown on the Proposal Bid Form is an estimate of fees required. Payment will be based on the actual permit, licenses, franchise fee invoices, and material testing fees paid directly to agency, franchise utility, or the material testing company selected by invoices, or material testing company invoices, specifically excluding any labor, mark-up, overhead and profit, administration and other costs involved in obtaining permits, licenses, lab results, or franchise utility coordination services. Fees specifically excluded from this allowance include but are not limited to dewatering permit fees, re-inspection fees; expired permit fees, and re-tests due to failed tests. The CITY reserves the right to award any, all, or none of the money associated with this allowance.
- P. **Item No. 20. 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.
- Q. **Item No. 21. Demobilization:** 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 and - all as per the Technical Specification and Contract Drawings. The payment items for demobilization shall not be less than 2% of the sum of Bid Items No. 2 through 17.

FURNISH AND INSTALL ALTERNATE UNIT PRICE BID ITEMS: The Basis of Payment Notes for Bid Payment Items No. 3 to 17 (as above described) are applicable for the following furnish and install alternate unit prices Bid Payment items A to J.

- A. Catch Basin 30"x37" unit price up to 10-ft depth
- B. Catch Basin 36"x36" unit price up to 10-ft depth
- C. Manhole 30"x30" unit price up to 10-ft depth

Items A, B and C include the connection of new and existing pipes (solid pipe or French Drain) to the drainage structure

- D. 24" Diam. Solid Pipe PVC A-2000
- E. 24" Diam. French Drain Perforated Pipe PVC A-2000
- F. Concrete Sidewalk (SF)

Includes 12" Stabilized Subgrade

- G. Connect existing 12" to 18" Dia. pipe to new or existing drainage structure
- H. Connect existing 24" to 30" Dia. pipe to new or existing drainage structure
- I. Pavement Resurfacing (1" Asphalt Overlay)
- J. Milling and Resurfacing 1"

Items I and J include the application of Tack Coat to the clean surface at a rate of 0.1 to 0.2 gallons per sq. yd. prior to 1" SP-9.5 Asphalt

- K. 10" Limerock Base
- L. 12" Stabilized Subgrade
- M. Furnish and Install Swale per swale detail (Watering schedule as required for the first month)
- N. Disconnect and Plug Existing 12" to 18" Diam. to a new or existing Drainage Structure
- O. Disconnect and Plug Existing 12 to 18" Diam. to a new or existing Drainage Structure
- P. CCTV 12" to 30" Diam. Drainage Line and submit Report
- Q. Replace PVC A-2000 24" Diam. Pipe
- R. Install Concrete Apron (refer to Drainage Detail)

- END OF SECTION -

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
MMA	Monorail 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 -

SECTION 01090 - REFERENCE STANDARDS

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications: Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date of the opening of bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- C. Specialists, Assignments: In certain instances, Specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of all applicable codes.
- B. References herein to "Building Code" shall mean the Florida Building Code (FBC). The latest edition of the code as approved and used by the local agency as of the date of the opening of bids, as adopted by the agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, Drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the ENGINEER for clarification and directions prior to ordering or providing any materials or labor. The CONTRACTOR shall follow the most stringent requirements.
- D. Applicable Standard Specifications: The CONTRACTOR shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and Specifications listed herein.

- E. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not used)

-END OF SECTION-

SECTION 01200 - PROJECT MEETINGS

PART 1 -- GENERAL

1.01 PRECONSTRUCTION

- A. A preconstruction meeting will be held to acquaint representatives of the CITY and various agencies with those in responsible charge of the CONTRACTOR's activities for the project. The meeting will cover such subjects as the following: insurance certificates; permits and licenses; affirmative action employment; construction schedules; cost breakdown and application for payments; material deliveries, storage and payments; shop drawings and submittals; job-site inspection by the ENGINEER; safety and emergency action procedures; operations of the existing treatment facilities; field offices, security and other housekeeping procedures; list of subcontractors; liquidated damages; communications; coordinating; and other appropriate matters.
- B. **Prior to excavating each new Drainage feature, Catch Basin and French Drain an on-site meeting will be held to discuss the upcoming improvements on that site.**

1.02 PROGRESS

- A. A progress meeting shall be held on a bi-weekly basis 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, issue an agenda.
- 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 ENGINEER will prepare a brief summary report of the decisions or understandings concerning each of the items discussed at the meeting.
- C. At bi-weekly progress meetings, the CONTRACTOR shall submit to the ENGINEER for review a current three (3) week progress schedule. This schedule submission shall include a two week look ahead schedule and reflect status of the work performed during the preceding week.

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 their final destination is to the CITY, ENGINEER, or other representatives of the CITY, shall be directed from the CONTRACTOR through the ENGINEER. A summary of the key types of required submittals and the number of copies to be coordinated with the ENGINEER is as follows:

<u>Copies to ENGINEER</u>	<u>Type of Submittal</u>
6 ¹	Construction schedule
6	Schedule of payment items
1	Audio visual preconstruction record
6	Progress estimates
10	Shop drawings
4	Certificates of compliance
2	Warranties
2 ²	Product samples
10	O&M Manuals
2 ³	Record drawings

¹One compact disk containing the electronic Primavera or Office Project source file shall also be included

²Unless otherwise required in the specific Section where requested.

³One original and one copy of the marked-up set of field Drawings (Original Markup).

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 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.
- B. The Contractor's progress schedule (baseline and monthly updates) shall be computer generated and resource loaded. Each construction progress schedule, and associated report shall include the following tabulations: a list of activities in numerical order, a list of activity precedence, schedules sequenced by Early Start Date, Total Float, and Late Start Date. Each schedule, and report shall include the following minimum items.
1. Activity Numbers
 2. Estimated Duration
 3. Activity Description
 4. Early Start Date (Calendar Dated)
 5. Early Finish Date (Calendar Dated)
 6. Latest Allowable Start Date (Calendar Dated)
 7. Latest Allowable Finish Date (Calendar Dated)
 8. Status (whether critical)
 9. Estimated Cost of the Activity
 10. Total Float and Free Float

- C. 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)
- D. The work day to calendar date correlation shall be based on an 8-hour day and 40-hour week with adequate allowance for holidays and all other special requirements of the Work. A total of five (5) days for adverse weather shall also be allowed for in the progress schedule such that the CONTRACTOR can secure the jobsite as specified in Section 01560.
- E. 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.
- F. 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.
- G. 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.
- H. 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.
- I. 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.
 - J. 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.
 - K. 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.
 - L. 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.
 - M. 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.
 - N. Available float time may be used by the CITY through the CITY'S ENGINEER.

- O. 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.
- P. 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.
- Q. 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.
- R. The CONTRACTOR shall present and discuss the proposed schedule at the preconstruction conference.
- S. 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.
- T. 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. Six (one 22-inch by 34-inch and five 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. Six (one 22-inch by 34-inch and four 11-inch x 17-inch) up-to-date copies of the schedule and six copies of tabulations and an electronic copy shall be submitted along with the application for monthly progress payments for the same period.

- U. 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 ten (10) copies of shop drawings, project data, samples and other submittal items required by the Contract Documents. Three (3) 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 (10 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):

Submittal Numbering System

1. Package ID: The package number will reflect the CSI (specification) section number as it appears in the specifications.
2. Subgroup ID: The submittal number will include the CSI number followed by two additional codes. The first will define the type of submittal as follows:
 - 01 Product Data, Specifications, Cut Sheets, Manufacturers certification or approval letters.
 - 02 Shop Drawings
 - 03 Product samples and mock-ups
 - 04 Special requirements as required in the contract documents
 - 05 As-Built Drawings
 - 06 Warranties
 - 07 O&M
 - 08 Spare Parts

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

↑
↑
↑

Finish Carpentry
Product Data
First Submittal

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.

- E. 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.
- F. 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.
- G. For any submission containing any departure from the Contract Documents and the CONTRACTOR shall include proper explanation in his letter of submittal.
- H. Work on fabricated or special items shall not be commenced until the required submission information has been reviewed and accepted.
- I. Standard items shall not be assembled or shipped until the required submission information has been reviewed and accepted.
- J. Prior review actions shall not relieve the CONTRACTOR of the responsibility for correcting errors, deviations, and/or omissions discovered at a later date.
- K. 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.
- L. 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.

- M. 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.
 - N. Product data shall include materials of construction, dimensions, performance characteristics, capacities, wiring diagrams, piping and controls, etc.
 - O. Samples: CONTRACTOR shall furnish for review all samples as required by the Contract Documents or requested by the ENGINEER.
 - P. 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.
 - Q. 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.
 - R. ENGINEER's review will be for compliance with the Contract Documents, and his comments will be transmitted to the CONTRACTOR with reasonable promptness.
 - S. 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 CITY 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. Availability of the O&M Manual is a prerequisite to the operation and acceptance of the system. 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. The amount of detail shall be commensurate with the complexity of the equipment item. They shall include all mechanical and electrical equipment such as valves, 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.

1.07 RECORD DRAWINGS

- A. 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.
- B. 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.

- C. In the case of those drawings which depict the detail requirement for equipment to be 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.
- D. Record drawings shall be accessible to the ENGINEER at all times during the construction period.
- E. Final payment will not be acted upon until the CONTRACTOR prepared record drawings have been delivered to the ENGINEER. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information overlaid in pencil.
- F. Upon substantial completion of the Work and prior to final acceptance, the CONTRACTOR shall finalize and deliver a complete set of 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 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 Record Drawings as a result.
- G. The information submitted by the CONTRACTOR in the record drawings shall be certified by a land surveyor registered in the State of Florida. This drawing should also be provided in CAD format and Surveyor Elevation Data in text format for the relevant new structures' elevations: unique ID, X-Coordinate, Y-Coordinate, Elevation, collected feature code, and collected feature description to be incorporated into our GIS database.
- H. The record drawings shall show the exact location of all structures and all mains within the right-of-way or easement, size and type of material of mains, all deflection points (vertical and horizontal), top pipe elevations and stationing at 100-foot increments, and exact dimensions and locations of all fittings and valves.

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 digital video disc (DVD) recording taken of the entire Project, including adjacent work areas, plant site and all other 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 discs covering the respective, affected construction area by the ENGINEER. The ENGINEER shall have the authority to reject all or any portion of the 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. 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 DVDs shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business of preconstruction color audio-video DVD documentation. The electrographer shall furnish to the ENGINEER a list of all equipment to be used for the audio-video recording, 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 recordings for on projects of a similar nature within the last twelve months.
- C. 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 DVD 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 disc 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 recording, 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, 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 Recording: All recording shall be done during times of good visibility. No recording 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. Disc Coverage: Disc 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 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.

1.11 PROJECT PHOTOGRAPHS

- A. The CONTRACTOR shall engage and pay for the services of a professional photographer for ground level progress pictures each month during the course of the construction activities. The photographer's periodic visits and work shall be coordinated with the CITY. A total of 12 progress photographs of completed work is required each month. A photograph (picture) shall be defined as one exposure.

B. Three 8 inch x 10 inch glossy prints and one 4 inch x 5 inch negative of each photograph shall be submitted to the ENGINEER with the CONTRACTOR's monthly estimate. The prints shall be placed in clear plastic holders for three-hole binder mounting, placed in three-ring binders and shall be labeled with the following information.

1. Site Work
2. Photo Number
3. Date picture was taken
4. Description
5. Name of photographer
6. Owner's witness

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

SECTION 01400 - TESTING AND INSPECTION

PART 1 -- GENERAL

- A. All testing and inspection will be in accordance with Article 12 of the General Conditions.
- 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 Documents, 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. The CITY will bear the cost of all additional tests, inspections, or investigations undertaken by the order of the ENGINEER for the purpose of determining conformance with the Contract Documents if such test, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the ENGINEER as a result of such test, inspections, or investigations, the CONTRACTOR shall bear the full cost thereof or shall reimburse the CITY for said cost. The cost of any additional tests and investigations, which are ordered by the ENGINEER to ascertain subsequent conformance with the Contract Documents, shall be borne by the CONTRACTOR.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

SECTION 01410

CONTRACTOR'S HEALTH AND SAFETY PLAN

PART 1 - GENERAL

1.1 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.

1.2 QUALITY ASSURANCE

A. Qualifications:

1. Engage an industrial hygienist certified by the American Board of Industrial Hygiene or a safety professional certified by the Board of Certified Safety Professionals to prepare or supervise the preparation of the SSHP.
2. Submit qualifications along with SSHP.

- B. Regulatory Requirements: CONTRACTOR's health and safety practices shall follow the standards and guidelines established in the following:

1. 29 CFR 1904, OSHA, Record Keeping.
2. 29 CFR 1910, OSHA, General Industry Standards.
3. 29 CFR 1926, OSHA, Construction Industry Standards.
4. 29 CFR 1926.65, OSHA, Hazardous Waste Operations and Emergency Response.
5. 49 CFR 171.8, DOT, Hazardous Materials in Transport.
6. 40 CFR Parts 261.3, 264 and 265, EPA, Resource Conservation and Recovery Act.
7. 29 CFR 1910.146, OSHA, Permit-Required Confined Spaces.
8. 29 CFR 1926.1101, OSHA, Asbestos

1.3 SUBMITTALS

A. Submit to ENGINEER the following:

1. CONTRACTOR's SSHP (Prior to the start of construction)
2. Qualifications of industrial hygienist or safety professional (Prior to the start of construction)
3. Health and safety reports.
4. Accident reports.

PART 2 - GENERAL

2.1 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.

2.2 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 CONTRACTOR's 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 CONTRACTOR's 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.

C. 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.

D. 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.

- E. The SSHP shall include procedures that will be used to ensure safe waste handling during the excavating, handling, loading, and transporting activities.

2.3 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 recurrence.
- D. Post a copy of CONTRACTOR's OSHA 300A report in a conspicuous place onsite.

2.4 DAILY HEALTH AND SAFETY FIELD REPORTS

- A. Submit to ENGINEER daily health and safety field reports including, but not limited to, weather conditions, delays encountered in construction, and acknowledgment of deficiencies noted along with corrective actions taken on current and previous deficiencies. In addition, the daily health and safety air monitoring results, documentation of instrument calibration, new hazards encountered, and PPE utilized shall be included.
- B. The daily health and safety field reports shall include a description of problems, real or anticipated, encountered during the course of Work that should be brought to the attention of the ENGINEER and notification of deviations from planned Work shown in the previously submitted daily health and safety field report(s).

PART 3 - EXECUTION (Not Used)

- END OF SECTION -

SECTION 01500

CONSTRUCTION CONSIDERATIONS

PART 1 - GENERAL

1.01 HYDRAULIC UPLIFT ON STRUCTURES

- A. The Contractor shall be completely responsible for any structures, stormwater conflicting structure, tanks, wet wells, pipelines, manholes, foundations, cellars, or similar structures that may become buoyant during the construction operations due to the ground water, floods or buoyancy of piping caused due to the placement of flowable backfills before the structure is put into operation. Should there be any possibility of buoyancy of a pipeline or structure, the Contractor shall take the necessary steps to prevent its buoyancy. Damage to any structures due to floating or flooding shall be repaired, or the structures replaced at the Contractor's expense.

1.02 WATER TIGHTNESS OF STRUCTURES

- A. General: It is the intent of these specifications that all concrete work, sealing work around built-in items and penetrations be performed as required to ensure that groundwater, rainwater, wastewater, chemical solutions or other process liquids in tanks, 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. Only potable water shall be used for the tests.
 - 3. The watertightness of buildings exclusive of the portions designed to contain liquids will consist of checking for leaks due to rain or groundwater infiltration.
 - 4. The Contractor shall provide at his own expense all labor, material, temporary bulkheads, pumps, water, measuring devices, etc., necessary to perform the required test.
- B. Built-in Items and Penetrations: All pipe sleeves, built-in items and penetrations shall be sealed as detailed and as required to ensure a continuous watertight seal.

1.03 CUTTING AND PATCHING

- A. The Contractor shall perform all cutting and patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. The Contractor shall not endanger any work of others by cutting, excavating

or otherwise altering their work and shall only cut or alter work with the written consent of the Engineer and of the other contractors whose work will be affected.

1.04 ABANDONMENT AND SALVAGE OF EXISTING FACILITIES

- A. General: The scope of work requires the Contractor to interface with existing structures, and piping which will be abandoned or otherwise removed and/or relocated as part of the work. Prior to beginning any work associated with existing facilities to be abandoned, salvaged, or otherwise removed or relocated, the Contractor shall inform the City and the Engineer of his intent so that all arrangements can be made with the City for isolating pipelines (where possible) or otherwise removing existing facilities from service to the extent possible. The Contractor shall not proceed without written authorization from the City. **The Contractor shall contact and coordinate accordingly with utilities companies prior to and during the execution of the relocation, removal or abandonment of existing utilities structures. Existing utilities coordination is exclusively the responsibility of the Contractor.**
- B. Pipelines: The Contractor shall abandon, salvage or otherwise remove existing pipelines or segments of existing pipelines shown to be abandoned in place, salvaged, or removed as part of the contract work. Unless otherwise indicated in the Contract Documents, all piping shown on the Drawings to be abandoned shall be abandoned in place. Pipe shown to be abandoned need only be removed a minimum three feet clear of new utilities to be installed. Abandon-in-place shall be defined as installing plugs, or other permanent closure, as reviewed and accepted by the City, on all termination's, open ends or ends of pipe designated as being cut, capped and anchored in an acceptable manner. The pipe will remain buried unless otherwise noted. All piping 6-inches in diameter and larger shall be grout filled when abandoned in place. See Sections 02080 and 03600 for additional requirements.
- C. Piping indicated on the Drawings as being removed, or any piping to be abandoned which interferes with new structures or piping, shall be excavated and removed using methods which will not disturb adjacent piping or other facilities. All pipe materials shall be subject to salvage by the City as defined below. Any remaining piping on both ends of pipe segments removed shall be abandoned in-place, per the above definition. After piping has been removed, the Contractor shall backfill the evacuated area in accordance with requirements set forth in other sections of these specifications.
- D. Equipment: The Contractor shall abandon, salvage or otherwise remove existing equipment or other facilities as shown on the Contract Drawings or indicated herein. In all cases, the Contractor shall exercise caution when handling the existing equipment so as not to disturb or damage adjacent facilities. The Contractor shall make all repairs to adjacent facilities which may be damaged as a result of the Contractor's efforts in abandoning, salvaging or otherwise removing existing facilities, at no additional cost to the City.
- E. Salvage: The City may desire to salvage certain items of existing equipment which are to be dismantled and removed during the course of construction. Prior to removal of any existing equipment or piping from the site of work, the Contractor shall ascertain from

the City whether or not the particular item or items are to be salvaged. Items to be salvaged shall be either stockpiled on the site, in a location as designated by the City, or delivered by the Contractor to the City's designated facility. All other items of equipment shall be disposed of off-site by the Contractor at his own expense, in accordance with applicable laws, ordinances and regulations.

1.05 DIMENSIONS OF EXISTING STRUCTURES

- A. Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

1.06 REHABILITATION

- A. Certain areas of existing structures, piping, conduits, and the like will be affected by work necessary to complete modifications under this Contract. The Contractor shall be responsible to rehabilitate those areas affected by its construction activities.
- B. Where new rectangular openings are to be installed in concrete or concrete masonry walls or floors, the Contractor shall score the edges of each opening (both sides of wall or elevated slab) by saw cutting clean straight lines to a minimum depth of one inch and then chipping out the concrete. Alternately, the opening can be formed by saw cutting completely through the slab or wall. Saw cuts deeper than one inch (or the depth of cover over existing reinforcing steel, whichever is less) shall not be allowed to extend beyond the limits of the opening. Corners shall be made square and true by a combination of core drilling, chipping, or grinding. All necessary precautions shall be taken during removal of concrete to prevent debris from falling and damaging adjacent equipment or piping. Saw cuts allowed to extend beyond the opening shall be repaired by filling with nonshrink grout. The concrete around any exposed reinforcement steel shall be chipped back and exposed reinforcement steel cut a minimum of 1-1/2 inches from the finished face of the new opening. The inside face of the new opening shall be 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 conduit or piping is to be installed through existing concrete walls, the Contractor shall accurately position the core-drill openings. Openings shall be adequately sized to allow alignment of piping or conduit and fittings without deflection and to provide adequate clearance for satisfactory packing in the annular space between the piping or conduit and the core drilling opening as shown on the Drawings.
- D. Where new piping is to be connected to existing piping, the existing piping shall be cut square and the ends properly prepared for the connection shown on the drawings. Any damage to the lining and coating of the existing piping shall be repaired by the Contractor.
- E. Where existing equipment, equipment pads and bases, piping, piping supports, electrical panels and devices, conduits, and associated appurtenances are removed, the Contractor shall rehabilitate the affected area such that little or no evidence of the previous installation remains. Opening in concrete floors, walls, and ceiling from piping, conduit,

and fastener penetrations shall be filled with nonshrink grout and finished to match the adjacent area. Concrete pads and bases for equipment and supports shall be removed by chipping away concrete and cutting any exposed reinforced steel and anchor bolts a minimum of 1-1/2 inches below finished grade. The area of concrete to be rehabilitated shall be scored by saw cutting clean, straight lines to a minimum depth of 1-1/2 inches, and all concrete within the scored lines removed to a minimum depth of 1-1/2 inches. The area within the scored lines shall be patched with nonshrink grout to match the adjacent grade and finish. Abandoned connections to piping and conduits shall be terminated with blind flanges, caps, and plugs suited for the material, type, and service of the pipe or conduit.

- F. Where existing structural steel members are removed or modified, the surface of the remaining existing steel members damaged by construction activities shall be repaired. The affected areas shall be surface prepared and coated in accordance with Section entitled "Painting."
- G. Disposal of Debris: All debris, materials, piping, and miscellaneous waste products from the work described in this section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

1.07 INSTALLATION OF EQUIPMENT

- A. Contractor shall have on hand sufficient personnel, proper equipment, and machinery of ample capacity to facilitate the work.
- B. Contractor shall be responsible for locating, aligning and leveling all equipment and shall employ a licensed surveyor to set all lines and levels of equipment to the accuracy required.
- C. Complete manufacturers installation instructions, including permissible tolerances, shall be furnished in duplicate with each unit of equipment or set of identical units.
- D. All equipment shall be installed in accordance with the shop drawings; inclusive of manufacturers' specifications, drawings and tolerances; under the direct supervision of the required manufacturers Engineer. No instructions shall be issued that are contrary to written specifications without prior written approval by the City's Engineer.
- E. Equipment shall be erected in a neat and workmanlike manner on the foundations' at the locations and elevations shown on the drawings unless otherwise indicated by the Engineer during installation.

1.08 SUPERVISION BY MANUFACTURER'S REPRESENTATIVES

- A. The Contractor shall provide the services of qualified equipment manufacturers technical representatives who shall adequately supervise the installation and testing of all equipment furnished under this Contract and instruct the Contractor's personnel and City's operating personnel in its maintenance and operation.

- B. All PCCP piping work shall require the Contractor to coordinate with Thompson Pipe and its representatives as necessary to perform the specified work. The Contractor shall pay for all costs associated with manufacturer's technical and field representatives; including but not limited to, meetings, coordination, field visits, technical submittals and submittal documentation, certifications, etc. as deemed necessary by the Owner or Engineer for the PCCP work effort.

1.09 EQUIPMENT MANUFACTURER'S CERTIFICATION

- A. As a condition precedent to acceptance of equipment installed and operating, the Contractor will provide the City with written certification, obtained from each company manufacturing equipment for the project that the equipment is installed and does operate in accordance with the specifications and manufacturers recommendations.

1.10 SLEEVES AND OPENINGS

- A. The Contractor shall provide all openings, chases, etc., to fit his own work and that of any other subcontractors and contractors. All such openings or chases shown on the Contract Drawings, or reasonably implied thereby, or as confirmed or modified by shop, setting or erecting drawings approved by the Engineer, shall be provided by the Contractor.
- B. Where pipes or conduits are to pass through slabs or walls, or where equipment frames or supports are to be installed as integral part of an opening, the sleeves, opening, forms or frames shall be furnished by the installer of the pipes, conduits or equipment, but shall be placed by the Contractor.
- C. Where hanger inserts, anchor bolts and similar items are to be embedded in concrete as an integral part of a slab or wall, they shall be furnished by the installer of the pipe or other equipment requiring the hanger, etc. but shall be placed by the Contractor.
- D. When requested by the Contractor, the installer of the pipes, conduit, or equipment, including those contractors or subcontractors who require openings or chases in slabs and walls for passage of ducts, mounting or equipment, etc., shall furnish all necessary information, instructions, and materials to effect accurate installation of the required openings, chases, sleeves, frames, inserts, etc. When such items are secured in position, and just prior to construction of the surrounding slab or wall, the subcontractor or contractor for whom the items are installed shall ascertain the proper number, locations, and settings thereof; and the Contractor shall schedule his operations so as to provide a reasonable opportunity and time interval for such inspection.
- E. Any cost resulting from correction of defective, ill-timed, or mislocated work, or for subsequent work which becomes necessary because of omitted openings, chases, sleeves, frames, inserts, etc., shall be borne by the subcontractor or contractor responsible therefor. No contractor or subcontractor shall arbitrarily cut, drill, alter, damage, or otherwise endanger the work of another Contractor. In no case shall beams lintels, or other structural members be cut without the approval of the Engineer. The nature and extent of any corrective or additional work shall be subject to the approval of the Engineer following consultation with the affected parties.

1.11 OBSTRUCTIONS

- A. All water pipes, storm drains, sanitary sewers, force mains, gas or other pipe, telephone or power cables or conduits and all other obstructions, whether 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.

1.12 SITE CONDITIONS

- A. The Contractor acknowledges that he has investigated prior to bidding and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, canal stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The City assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the City.

1.13 CONSTRUCTION DEWATERING

- A. All dewatering equipment such as pumps, air compressors, generators, etc. proposed for use during construction in residential areas shall be provided with noise enclosures suitable to meet the requirements of the City of Hollywood Noise Ordinance and/or Broward County Noise Ordinance, whichever is more stringent.
- B. Dewatering shall be done in accordance with Section 02140 - Dewatering.

1.14 SUBSURFACE INVESTIGATIONS

- A. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the nature and location of the work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the groundwater condition, the character of equipment and facilities required preliminary to and during the performance of the work, the general

and local conditions and all other matters which can in any way affect the work under this Contract. The prices established for the work to be done shall reflect all costs pertaining to the work. Any claims for extras based on the substrata or ground water table conditions will be disallowed.

- B. The Contractor further acknowledges that he assumes all risk contingent upon the nature of the subsurface conditions actually encountered by him in performing the work covered by the Contract, even though such actual conditions may result in the Contractor performing more or less work than he originally anticipated.
- C. Existing utilities shall be protected in accordance with Section 01530 - Protection of Existing Facilities.

1.15 DIFFERING SITE CONDITIONS

- A. The Contractor shall promptly and before such conditions are disturbed, notify the City in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for this contract. The City will promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

1.16 PROTECTION OF PROPERTY

- A. The Contractor shall protect all property that may be affected by his work or operations in accordance with Section 01530 - Protection of Existing Facilities. The location and extent of underground and covered facilities are not guaranteed.
- B. The Contractor is cautioned to proceed with care in order to prevent the undermining or damage to existing utilities including piping, power cable, utility poles, conduit, duct banks, fiber optic cable, gas, telephone and cable TV services, structures, piping, and other facilities.
- C. The Contractor shall take all measures necessary to protect new and existing mechanical equipment from dust and debris. All protective measures shall be furnished, installed, lighted, ventilated, maintained, and removed at the Contractor's own cost.
- D. When city water is being used, the supply source shall be protected against contamination in accordance with existing codes and regulations.
- E. In the event any of the Contractor's activities were to disrupt or endanger any facilities, he shall at his own expense make all necessary repairs or replacements necessary to correct the situation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hour per day, seven workday basis. The Contractor

shall be responsible for the services of repair crews on call 24 hours per day for emergencies that arise involving work under this Contract.

1.17 WEATHER CONDITIONS

- A. Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms the Contractor shall take necessary precautions to protect all work, materials and equipment from exposure. The City reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the project. The Contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the City for damage to the work from the elements of weather.

1.18 FIRE PROTECTION

- A. The Contractor shall take all necessary precautions to prevent fires at or adjacent to the work, including his own buildings and trailers. Adequate fire extinguisher and hose line stations shall be provided throughout the work area.

1.19 SAFETY AND HEALTH REQUIREMENTS

- A. The Contractor shall comply in every respect with all Federal, State and local safety and health regulations. Copies of the Federal Regulations may be obtained from the U.S. Department of Labor, Occupational Safety and Health Administration.
- B. The Contractor shall provide all barricades and flashing warning lights or other traffic and warning devices necessary to warn pedestrians and area traffic. See Section 01570 – Traffic Regulations and Maintenance of Traffic.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01520

MAINTENANCE OF FACILITIES AND SEQUENCE OF CONSTRUCTION

PART 1 - GENERAL

1.01 GENERAL

- A. The Contractor shall ensure the continuous operation of all existing sanitary sewer systems, potable water systems, and stormwater facilities during construction. In addition, the Contractor shall provide temporary traffic routing and coordinate his work so as to minimize impact to the utilities systems located in the area. In performing the work shown and specified, the Contractor shall plan and schedule his work as outlined in this Section.

1.02 CONSTRUCTION SCHEDULE

- A. **The Construction Schedule shall be submitted by the Contractor and include phasing considerations, layout, sequencing and plans. 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 is 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. Homeowners shall have access to their driveways at all times.
2. The excavation area shall be surrounded with barricades and obstructions illuminated with temporary lighting furnished, installed and maintained by the Contractor.
3. Final restoration of roads, driveways, sidewalks and all other paved areas shall be completed within 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 \$500/DAY for not complying with any one of the above requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COORDINATION WITH EXISTING UTILITIES AND OTHER AGENCIES

- A. The Contractor shall coordinate with Sunshine One-Call Notification at 811 a minimum of 48 business hours prior to any excavation for location of existing underground facilities.

3.02 COOPERATION

- A. The Contractor shall allow the City or its agents, and other project contractors or their agents, to enter facilities being constructed under this Contract for the purpose of constructing, installing, operating, maintaining, removing, repairing, altering or replacing

such equipment pipes, sewers, conduits, manholes, wires, or other structures and appliances which may be required to be installed at or in the work. The Contractor shall cooperate with all the aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the City, or others, to be done in connection with his work, or in connection with normal use of the facilities.

END OF SECTION

SECTION 01530

PROTECTION OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after award of Contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's Work. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall 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

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

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.	North Lake Area	South Lake Area
A1A	Sheridan Street	Dania Beach Blvd.
US Highway 1	46 th Avenue	Hallandale Beach Blvd.

1.06 PESTS AND RODENTS

- A. The Contractor shall be responsible for maintaining the jobsite free from litter, rubbish and garbage and shall provide containers for the disposal of garbage and other materials that attract and are breeding places for pests and rodents. The Contractor shall provide the services of an exterminator to inspect the jobsite on a periodic basis and to provide service as required to control pests and rodents, as applicable and at no cost to the city.

1.07 PERIODIC CLEAN-UP; BASIC SITE RESTORATION

- A. During construction, the Contractor shall regularly remove from the site all accumulated debris and surplus materials of any kind which result from his operations, or whenever the accumulation in excess of one truck load. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the project.
- B. When the work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, the Contractor shall (as the work progresses) promptly backfill, compact, grade and otherwise restore the disturbed area to a basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or function consistent with the original use of the land. Unsightly mounds of earth, large stones, tree roots, boulders, and debris shall be removed so that the site presents a neat appearance.
- C. The Contractor shall perform the clean-up work on a regular basis and as frequently as ordered by the Engineer. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.
- D. Upon failure of the Contractor to perform periodic clean-up and basic restoration of the site to the Engineer's satisfaction, the Engineer may, upon five (5) days prior written notice to the Contractor, employ such labor and equipment as he deems necessary for the purpose, and all costs resulting therefrom shall be charged to the Contractor and deducted from the amounts of money that may be due him.

1.08 SECURITY

- A. The Contractor shall care for and protect against loss or damage of all material to be incorporated in the construction for the duration of the Contract and shall repair or replace damaged or lost materials and damage to structures.
- B. The Contractor shall be responsible for providing and maintaining temporary fencing and gates and the daily securing of temporary fencing and gates used for construction purposes for the duration of the project.

- C. The Contractor shall strictly comply with working hours on the project site. Prior to any work outside of the standard working hours, the Contractor shall request the City's approval via written request (at least 8 hours in advance). The written request shall clearly define the work to be performed, the names of the employees, their employer and their trade and the hours and days during which the work is planned. Other jurisdictions requiring notification or as part of a permit condition must also be coordinated with and notified by the Contractor prior to commencement for all work hours.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01570

TRAFFIC REGULATIONS AND MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.01 TRAFFIC CONTROL

- A. Contractor shall obey all traffic laws and comply with all the requirements, rules and regulations of the State of Florida Department of Transportation (FDOT), the City of Hollywood, Broward County and other local authorities having jurisdiction, to maintain adequate warning signs, lights, barriers, etc., for the protection of vehicular traffic and pedestrian traffic on public roadways and within the project corridor.
- B. The Contractor shall maintain traffic and protect the public from all damage to persons and property within the Contract Limits, in accordance with the Contract Documents and all applicable state, city and local regulations. The Contractor shall conduct its construction operations so as to maintain and protect access, for vehicular and pedestrian traffic, to and from all properties and business establishments adjoining or adjacent to those streets affected by his operations, and to subject the public to a minimum of delay and inconvenience. Suitable signs, barricades, railing, etc. shall be erected and the work outlined by adequate lighting at night. Danger lights shall be provided as required. Watchmen, flagmen, and crossing guards shall be provided as may be necessary for the protection of traffic. Traffic Control and Maintenance of traffic during construction shall be included in the Contractor's bid and no additional payment shall be requested to the City for these activities
- C. For the protection of vehicular and pedestrian traffic in public or private streets and alleyways, the Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices (MUTCD), published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1).
- D. The Contractor shall submit a Maintenance of Traffic (MOT) Plan for Engineer and/or City approval at least 60 days prior to construction work. The plan shall be signed and sealed by a registered PE in the state of Florida. All MOT submittals must be done by the Contractor in advance of the work effort such that approvals may be obtained, 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

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

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	Date of submittal	3/3/2009	
2			
3	Collection Date	3/3/2009	
4			
5	Project Number	123456	
6			
7	Project Name	ABC	
8			
9	Contractor Name	Joe Contractor	
10			
11	Company	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	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Service Type		
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	Utilities Asset Number	Easting	Northing	Elevation	Valve Type	Service Type
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	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Invert Elev N	Invert Elev NE	Invert Elev E	Invert Elev SE	Invert Elev S	Invert Elev SW	Invert Elev W	Invert Elev NW	Service Type
2	15	15	535896.3040	1491144.0450	96.31	91.56	88.81			88.71		88.61		Water Reclamation
3	277	277	505962.0207	1474906.7832	92.76		86.83				86.85			Water Reclamation
4	278	278	506130.5461	1475093.6556	91.00					85.95		86.17		Water Reclamation
5	279	279	505993.3960	1475243.3448	92.36					88.8				Water Reclamation

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements / Lookup / Relation

Meter Worksheet

	A	B	C	D	E	F	G
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Meter Type	Service Type
2	7	7	535887.9950	1491394.7730	96.74	Flow	Water

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements

Fitting Worksheet

	A	B	C	D	E	F	G
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Fitting Type	Service Type
2	20008	F0001	538549.20	1475457.69	78.94	Tee	Water Reclamation
3	20010	F0002	538544.73	1475457.74	78.94	Tee	Water Reclamation
4	20013	F0003	538544.36	1475467.92	79.02	Tee	Water Reclamation

General Info / Hydrants / Valve / Manhole / Meter / 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	538055.74	79.74	Distribution	Pressurized		Water Reclamation
4	20004	P00003	1475470.75	538166.01	79.46	Distribution	Pressurized		Water Reclamation

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / 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**

Project Contractor: Progress Mtg Date: Contract # Dwg Sheet # Utility Type Pipe Manufacturer Pipe size & material PVC Manufacturer Deflection County Allowable Deflection 75% Allowable Angle of Offset Allowable Radius of Curvature Laying Length of Pipe	FM National Pipe 16" PVC C905 6 inches 4.5 inches 1.5 degrees 764 feet 20 feet	
--	---	--

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 been inputted
 Values in yellow are over spec

^{*}Uses law of cosines to determine angle ABC and Ø.
 $\text{angle } ABC = \arccos((AB^2 + BC^2 - AC^2) / (2 * AB * BC))$
 $180 - \text{angle } ABC = \text{angle } \phi$
 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 law of sines, using the chord length AC and radius R.
 $\text{Since } \sin((\phi/2) * (\pi/180)) = (\text{Chord}/2) / R \text{ and length } AC = \text{Chord}$
 $R = AC / (2 * \sin(\phi * \pi / 360))$
 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

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, Florida East Coast (FEC) Railroad (as applicable), 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)	TBD
Broward County EPGMD (wastewater)	TBD
Broward County HCED (Right of Way)	TBD
Florida Department of Transportation	TBD
City of Hollywood Building Department	TBD

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, railroad, 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

DIVISION 2

SITE WORK

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 the like where to be preserved.

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 and right-of-ways to install the pipeline and appurtenances. The Work shall include the 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.

SECTION 02100

CLEARING AND GRUBBING

- 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 Section 02224 – Excavation and Backfill for 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. Prevent surface water from entering the excavation during construction.
 - 4. 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 for discharge from the Contractor's dewatering systems in accordance with Broward County Water Management Division and South Florida Water Management District (SFWMD) requirements. The Contractor shall conform with all permit requirements.

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.

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.

SECTION 02140

DEWATERING

- (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.
 - (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.

SECTION 02140

DEWATERING

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 Section 01610 and as specified.

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

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DEWATERING

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.
- F. Provide and maintain erosion/sedimentation control devices as indicated or specified and in accordance with the dewatering plan.
- G. Provide temporary pipes, hoses, flumes, or channels for the transport of discharge water to the discharge location.
- H. Provide cement grout having a water cement ratio of 1 to 1 by volume.

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' 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.
- 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.

SECTION 02140

DEWATERING

- 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 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.
 - 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.

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DEWATERING

J. Install and maintain erosion/sedimentation control devices at the point of discharge as indicated or specified during the pre-construction meeting and in accordance with the dewatering plan.

K. Removal:

1. Do not remove dewatering system without written approval from the Engineer.
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.

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TEMPORARY EXCAVATION SUPPORT SYSTEMS

1.02 RELATED WORK

- A. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- B. Section 03300 - Cast in Place & Precast Concrete

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.

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TEMPORARY EXCAVATION SUPPORT SYSTEMS

- (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 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.

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TEMPORARY EXCAVATION SUPPORT SYSTEMS

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 (NGVD 1929) 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.
- 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.

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TEMPORARY EXCAVATION SUPPORT SYSTEMS

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:

<u>Type of Concrete</u>	<u>Age of Concrete, hrs</u>	<u>Peak Particle Velocity in/sec</u>
Mass Concrete (footings, mats, Slab-on-grade, fill concrete, etc.)	0-11	1.0
	11 and over	2.0
Concrete Structures (walls, columns, elevated slabs, etc.)	0-11	0.5
	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.

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TEMPORARY EXCAVATION SUPPORT SYSTEMS

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.

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TEMPORARY EXCAVATION SUPPORT SYSTEMS

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. Provide in accordance with Sections 01600 and as specified.
- B. 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, 02222, 02224 and the project Geotechnical Report.
- B. Concrete: Section 03300 - Cast in Place & Precast Concrete

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

SECTION 02160

TEMPORARY EXCAVATION SUPPORT SYSTEMS

- 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 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 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:

SECTION 02160

TEMPORARY 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. Sheeting 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 02222

EXCAVATION AND BACKFILL FOR UTILITIES

Part 1 - GENERAL

1.01 THE REQUIREMENT

- A. Excavate, grade and backfill as required for underground piping systems and appurtenances as shown on the Drawings and specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02500 - Surface Restoration
- B. Division 3 - Concrete

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".
- B. Commercial Standards:

ASTM C33	Standard Specification for Concrete Aggregates
ASTM D 422	Method for Particle-Size Analysis of Soils.
ASTM D 698	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in (304.8-mm) Drop.
ASTM D 1556	Test Method for Density of Soil in Place by the Sand-Cone Method.
ASTM D 1557	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in (457-mm) Drop.
ASTM D 2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
ASTM D 2922	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.04 SUBMITTALS

SECTION 02222

EXCAVATION AND BACKFILL FOR UTILITIES

- A. General: Submit information and samples to the ENGINEER for review as specified herein in accordance with Section 01300, "Submittals".
- B. Dewatering: The CONTRACTOR shall submit to the ENGINEER its proposed methods of handling trench water and the locations at which the water will be disposed of. Methods shall be acceptable to the ENGINEER before starting the excavation.
- C. Bedding and Backfill Materials: The CONTRACTOR shall notify the ENGINEER of the off-site sources of bedding and backfill materials, and submit to the ENGINEER a representative sample weighing approximately 50 lbs. The sample shall be delivered to a location on site determined by the ENGINEER.
- D. Sheeting System: Drawings of the sheeting system and design computations shall be submitted to the ENGINEER; however, the review of these drawings shall in no way relieve the CONTRACTOR of the responsibility to provide a safe and satisfactory sheeting and shoring system. Sheeting and shoring shall be designed by the CONTRACTOR, and the proposed design shall be sealed by a Professional ENGINEER registered in the State of Florida. If the ENGINEER is of the opinion that at any point sufficient or proper supports have not been provided, it may order additional supports put in at the CONTRACTOR's expense.
- E. 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.

1.05 QUALITY CONTROL

- A. An independent testing laboratory (Testing Laboratory) will be selected by the CITY to perform field and laboratory soil testing as described in Section 01400, "Testing and Inspection". The cost of the first round of tests will be paid from the "Cost Allowance for Permits, Licenses and Fees". The costs of subsequent recompaction and retesting resulting from not achieving the required minimum compaction shall be borne by the CONTRACTOR at no additional cost to the CITY.
- B. The CONTRACTOR shall schedule its work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the Testing Laboratory informed of his progress. A minimum of 48 hours of notice shall be provided to the Testing Laboratory to mobilize its activities.

1.06 SUBSURFACE INFORMATION

- A. The CONTRACTOR shall be responsible for anticipating groundwater conditions and shall provide positive control measures as required. Such measures shall ensure

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EXCAVATION AND BACKFILL FOR UTILITIES

stability of excavations, groundwater pressure control, prevention of tanks, pipes, and other structures from being lifted by hydrostatic pressures, and avoiding the disturbance of subgrade bearing materials.

1.07 TRENCH SAFETY ACT COMPLIANCE

- A. The CONTRACTOR by signing and executing the contract is, in writing, assuring that it will perform any trench excavation in accordance with the Florida Trench Safety Act, Section 553.60 et. seq.. The CONTRACTOR has further identified the separate item(s) of cost of compliance with the applicable trench safety standards as well as the method of compliance as noted in the "Bid Forms" Section of the Contract front-end documents.
- B. The CONTRACTOR acknowledges that this cost is included in the applicable items of the Proposal and Contract and in the Grand Total Bid and Contract Price.
- C. The CONTRACTOR is, and the CITY and ENGINEER are not, responsible to review or assess the CONTRACTOR's safety precautions, programs or costs, or the means, methods, techniques or technique adequacy, reasonableness of cost, sequences or procedures of any safety precaution, program or cost, including but not limited to, compliance with any and all requirements of Florida Statute Section 553.60 et. seq. cited as the "Trench Safety Act". The CONTRACTOR is, and the CITY and ENGINEER are not, responsible to determine if any safety or safety related standards apply to the project, including but not limited to, the "Trench Safety Act".

1.08 PROTECTION OF PROPERTY AND STRUCTURES

- A. The CONTRACTOR shall, at its own expense, sustain in place and protect from direct or indirect injury, all pipes, poles, conduits, walls, buildings, and all other structures, utilities, and property in the vicinity of its Work. Such sustaining shall be done by the CONTRACTOR. The CONTRACTOR shall take all risks attending the presence or proximity of pipes, poles, conduits, walls, buildings, and all other structures, utilities, and its Work. It shall be responsible for all damage, and assume all expenses, for direct or indirect injury and damage, caused by its Work, to any such pipe, structures, etc., or to any person or property, by reason of injury to them, whether or not such structures, etc., are shown on the Drawings.
- B. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations. Barricades with flashing lights shall also be placed along excavation from sunset each day to sunrise of the next day until such excavation is entirely refilled, compacted, and paved. All excavations shall be barricaded where required to meet OSHA, local and Federal Code requirements, in such a manner to prevent

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EXCAVATION AND BACKFILL FOR UTILITIES

persons from falling or walking into any excavation within the site fenced property limits.

1.09 DEWATERING PERMITS

A. The CONTRACTOR shall be responsible for obtaining all permits required for the dewatering operation.

Part 2 - PRODUCTS

2.01 BEDDING MATERIAL

A. Bedding materials shall be furnished from acceptable off-site sources. The CONTRACTOR shall submit to the ENGINEER the sources of each material for review in accordance with Section 01300, "Submittals".

B. Crushed stone (or drainfield limerock) shall be used as bedding material for piping (except for copper pipe) and/or manholes as shown on the Standard Details when the installation is below the ground water table elevation. Crushed stone shall consist of hard, durable, sub-angular particles of proper size and gradation, and shall be free from organic material, wood, trash, sand, loam, clay, excess fines, and other deleterious materials.

1. For pipe diameters less than 24 inches, the stone shall conform to the requirements of ASTM C 33, Size No. 57 (3/4-inch rock) and be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
1-½ inch	100
1 inch	95 - 100
½ inch	25 - 60
No. 4	0 - 10
No. 8	0 - 5

2. For bedding of 24 inch and larger diameter pipe, the stone shall conform to the requirements of ASTM C 33 and be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
5/8 inch	100
1/2 inch	40 - 100
3/8 inch	15 - 45
No. 10	0 - 5

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- C. Sand shall be used for bedding pipe when installed under dry trench conditions, or above the ground water table. Sand shall also be used for bedding copper pipe under all conditions. Sand shall be dry, screened, graded sand with 100 percent passing a 3/8-inch sieve and not more than 5 percent passing a No. 200 sieve.
- D. Limerock screenings, sand or other fine material shall not be used for bedding.
- E. All pipe bedding material shall be new, unless otherwise approved by the Engineer. Existing pipe bedding material may not be used.

2.02 SELECT BACKFILL

- A. Select Backfill: Select backfill shall be clean sandy material passing through a 3/4-inch sieve as select backfill material.

2.03 GENERAL BACKFILL

- A. All other backfill (general backfill) placed above the select backfill shall pass through a 6-inch ring. General backfill shall contain no more than 10 percent organics. General backfill used under roadways shall be compatible with the materials and compaction specified under Section 02510 – Asphaltic Concrete Pavement and 02526 – Concrete Pavement, Curb and Walkway.

Part 3 - EXECUTION

3.01 EXCAVATION

- A. The CONTRACTOR shall perform all excavation of every description and of whatever substance encountered, to the dimensions, grades and depths shown on the Drawings, or as required for a proper installation. All excavations shall be made by open cut and in accordance with the Trench Safety Act. All existing utilities such as pipes, poles and structures shall be carefully located, supported and protected from injury; in case of damage, they shall be restored at the CONTRACTOR's expense.
- B. Pipe trenches for piping shall be excavated to a width within the limits of the top of the pipe and the trench bottom so as to provide a clearance on each side of the pipe barrel, measured to the face of the excavation, or sheeting if used, of 6 inches to 12 inches as defined on the Drawings. All pipe trenches shall be excavated to a level where suitable material is reached, a minimum of 8 inches below the pipe barrel or that will allow for a minimum of 36 inches of covering unless otherwise indicated on the Drawings.
- C. Ladders or steps shall be provided for and used by workmen to enter and leave trenches.
- D. Excavated unsuitable material shall be removed from the site and disposed of by the CONTRACTOR. Materials removed from the trenches shall be stored and in such a

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EXCAVATION AND BACKFILL FOR UTILITIES

manner that will not interfere unduly with traffic on public roadways and sidewalks and shall not be placed on private property. In congested areas, such materials that cannot be stored adjacent to the trench or used immediately as backfill shall be removed to other convenient places of storage acceptable to the CITY at the CONTRACTOR's expense.

- E. Excavated material that is suitable for use as backfill shall be used in areas where sufficient material is not available from the excavation. Suitable material in excess of backfill requirements shall be disposed off-site at the CONTRACTOR's expense.

3.02 SHEETING AND BRACING

- A. The CONTRACTOR shall furnish, place and maintain sheeting and bracing to support sides of the excavation as necessary to provide safe working conditions in accordance with OSHA requirements, and to protect pipes, structures and other Work from possible damage. Where wood sheeting or certain designs of steel sheeting are used, the sheeting shall be cut off at a level of 2 feet above the top of the installed pipe and that portion below the level shall be left in place. If interlocking steel sheeting is used, it may be removed providing removal can be accomplished without disturbing the bedding, pipe or alignment of the pipe. Any damage to the pipe bedding, pipe or alignment of the constructed utility caused by the removal of sheeting shall be cause for rejection of the affected portion of the work. The CITY may permit sheeting to be left in place at the request and expense of the CONTRACTOR, or the CITY may order him in writing to leave in place, for the preventing of damage to structures or property. Payment for sheeting ordered to remain in place shall be paid for at a negotiated price.
- B. If the ENGINEER is of the opinion that at any point sufficient or proper supports, have not be provided, he may order additional supports put in at the CONTRACTOR's expense. The CONTRACTOR shall be responsible for the adequacy of all sheeting used and for all damage resulting from sheeting and bracing failure or from placing, maintaining and removing it.

3.03 REMOVAL OF WATER

- A. General: It is a basic requirement of these Specifications unless otherwise authorized per Article 3.09 that excavations shall be free from water before pipe or structures are installed.
- B. The CONTRACTOR shall provide pumps, and other appurtenant equipment necessary to remove and maintain water at such a level as to permit construction in a dry condition. The CONTRACTOR shall continue dewatering operations until backfilling has progressed to a sufficient depth over the pipe to prevent flotation or

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EXCAVATION AND BACKFILL FOR UTILITIES

movement of the pipe in the trench or so that it is above the water table. If at any point during the dewatering operation it is determined that fine material is being removed from the excavation sidewalls, the dewatering operation shall be stopped. If any of the subgrade or underlying material is disturbed by movement of groundwater, surface water, or any other reason, it shall be replaced at the CONTRACTOR's expense with crushed stone or gravel.

- C. 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.
- D. Disposal: Water from the trenches and 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, cause any interference with the use of the same by the public, or cause pollution of any waterway or stream. The CONTRACTOR shall submit his proposed methods of handling trench water and locations at which the water will be disposed of to the ENGINEER for review and shall receive acceptance before starting the excavation. Disposal to any surface water body will require silt screens to prevent any degradation in the water body. The CONTRACTOR shall have responsibility for acquiring all necessary permits for disposal.

3.04 TRENCH STABILIZATION

- A. No claim for extras, or additional payment will be considered for cost incurred in the stabilization of trench bottoms which are rendered soft or unstable as a result of construction methods, such as improper or inadequate sheeting, dewatering or other causes. In no event shall pipe be installed when such conditions exist and the CONTRACTOR shall correct such conditions so as to provide proper bedding or foundations for the proposed installation at no additional cost to the CITY before placing the pipe or structures.

3.05 PIPE BEDDING IN DRY TRENCHES

- A. Pipe trenches shall be excavated as described in Article 3.01. The resulting excavation shall be backfilled with acceptable pipe bedding material, up to the level of the centerline of the proposed pipe barrel. This backfill shall be tamped and compacted to provide a proper bedding for the pipe and shall then be shaped to receive the pipe. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting.

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- B. Any over excavation below the levels required for installation of the pipe shall be backfilled with acceptable bedding material, tamped, compacted and shaped to provide proper support for the proposed pipe, at the CONTRACTOR's expense.

3.06 BACKFILL

- A. The CONTRACTOR shall not backfill trenches until the piping has been inspected and tested in accordance with Section 15995 - Pipeline Testing and Disinfection.
- B. Pipelines: Pipeline trenches shall be backfilled to a level 12 inches above the top of the pipe with select backfill. When placed in the dry, such material shall be placed in 9-inch layers, each compacted to the densities specified in Article 3.07. Only hand operated mechanical compacting equipment shall be used within six inches of the installed pipe.
- C. After the select backfill has been placed as specified above, and after all excess water has completely drained from the trench, general backfilling of the remainder of the trench may proceed. General backfill shall be placed in horizontal layers, the depth of which shall not exceed the ability of the compaction equipment employed, and in no event shall exceed a depth of 12 inches. Each layer shall be moistened, tamped, puddled, rolled or compacted to the densities specified in Article 3.07.
- D. Manholes and Vaults: Any excavation below the levels required for the proper construction of manholes or vaults shall be filled with Class B concrete. The use of earth, rock, sand or other materials for this purpose will not be permitted.

3.07 COMPACTION AND DENSITIES

- A. Compaction of backfill shall be 98% of the maximum density where the trench is located under structures or paved areas, and 95% of the maximum density elsewhere. Methods of control and testing of backfill construction are:
 - 1. Maximum density of the material in trenches shall be determined by ASTM D 1557.
 - 2. Field density of the backfill material in place shall be determined by ASTM D 1556 or D 2922.
- B. Density Test Locations for Pipelines: The compacted backfill/fill shall be tested for in-place density at the rate of one test location per 200 lineal feet (or fraction thereof) of trench, or as shown on the Drawings or as directed by the ENGINEER. The density tests shall be taken at the trench bottom and at each location in one foot intervals beginning from the top of the piping and ending at the final grade. At existing road or pavement crossings, a minimum of two (2) density tests per crossing per lift is required.

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- C. Trench backfill which does not comply with the specified densities, as indicated by such tests, shall be reworked and recompact until the required compaction is secured, at no additional cost to the CITY. The costs for retesting such Work shall be paid for by the CONTRACTOR.

3.08 ADDITIONAL EXCAVATION AND BACKFILL

- A. Where organic material, such as roots, muck, or other vegetable matter, or other material which, in the opinion of the ENGINEER, will result in unsatisfactory foundation conditions, is encountered below the level of the proposed pipe bedding material, it shall be removed to a depth of two feet below the outside bottom of the pipe or to a greater depths as directed by the ENGINEER and removed from the site. Sheeting shall be installed if necessary to maintain pipe trenches within the limits identified by the ENGINEER. The resulting excavation shall be backfilled with suitable backfill material, placed in 12-inch layers, tamped and compacted up to the level of the bottom of the proposed pipe bedding material. Sufficient compaction of this material shall be performed to protect the proposed pipe against settlement. Lean concrete may be used in lieu of backfill when pipe installation is in the wet or at the CONTRACTOR's option. Construction shall then proceed in accordance with the provisions of Article 3.05.
- B. Additional excavation (more than two feet below the pipe) shall be performed when ordered by the ENGINEER. Where organic or other material is encountered in the excavation, the CONTRACTOR shall bring the condition to the attention of the ENGINEER and obtain his determination as to whether or not the material will require removal, prior to preparing the pipe bedding. The excavation of material up to a depth of two feet below the outside bottom incidental items of construction and the Work shall be done at no additional cost to the CITY. Where ordered by the ENGINEER, excavation greater than two feet below the pipe, backfill and additional sheeting, will be compensated by the CITY.

3.09 ALTERNATE METHOD OF CONSTRUCTION

- A. Use of This Method: A combination of conditions in the substrate, water table, or method of disposal may be encountered during the course of the work which makes dewatering impossible. When such conditions are encountered, but only after all reasonable means (pumps, well points, etc.) to dewater the excavation have been employed without success, the CONTRACTOR, may request to employ the following Alternate Method of Construction. The concurrence of the ENGINEER shall be obtained in writing and shall limit the use of the alternate method of construction to such specific portions of the Work as the ENGINEER shall determine.

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EXCAVATION AND BACKFILL FOR UTILITIES

- B. The requirements set forth in other sections of these Specifications shall establish the required standards of construction quality for this work. Use of the alternate method of construction described hereinafter shall in no way be construed as relieving the CONTRACTOR of the work. No additional payment will be made to the CONTRACTOR for excavation, backfill, sheeting or any cost incurred for Work or materials, or any other costs incurred as a result of the use of this alternate method of construction. The prices established in the Proposal shall be for full payment for the various items of work.
- C. Subject to all the requirements stated herein, including written acceptance of the ENGINEER, construction will be permitted in accordance with the following specifications. All requirements of these Specifications shall apply to this construction unless otherwise specifically modified herein.
- D. Removal of Water: The installation of pipe and appurtenances under water will be permitted and the requirements of Article 3.03 will be waived.
- E. Excavation shall be performed in accordance with Article 3.01 to the specified limits. The excavation shall be completely cleaned of silt and other fines.
- F. Pipe Bedding: Pipe bedding shall be placed from the bottom of the excavation to six inches above the top of the pipe. The bedding material shall be screened gravel or crushed stone as specified in Article 2.01. Limerock screenings, sand or other fine organic material shall not be used.
- G. The bedding material shall be placed to the lower third of the pipe barrel and then be shaped to receive the pipe at the intended elevation. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting. After the pipe section is installed and tested if required, the remaining bedding shall be placed to the top of the pipe.
- H. Select backfill material shall be used to backfill from 6 inches above the top of the pipe to a level one foot above standing ground water. The lift shall then be compacted per Article 3.07. General backfill shall then be placed in 8-inch lifts and compacted per Article 3.07.
- I. If the Alternate Method of Construction is used, all backfill material, including specified pipe bedding material, shall be carefully lifted into the trench and not released to fall freely therein until the bucket or container is at or just above water level. Under no circumstances shall backfill material be dumped or pushed into the trenches containing water. Below water level, the bedding and backfill material shall be carefully rammed into place in uniform layers, of equal depth on each side of the pipe, up to one foot above the water level. Above the water level, backfill material shall be placed and compacted for normal backfill as previously specified.

3.10 RESTORATION OF EXISTING SURFACES

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EXCAVATION AND BACKFILL FOR UTILITIES

- A. Restore all grassed areas disturbed by the trenching operations by resodding in accordance with Section 02500 – Surface Restoration.

- END OF SECTION –

SECTION 02223

STANDARD SPECIFICATIONS

ABANDONMENT OF PIPELINES

A. PART 1 - GENERAL

A. Description

This section includes abandonment in place of existing pipelines, when indicated on the drawings for abandonment.

B. Related Work Specified Elsewhere

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).

C. Reference Standards

1. ASTM C150 – Standard Specification for Portland Cement
2. ASTM C494 – Standard specification for Chemical Admixture for concrete
3. ASTM C618 – Standard Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for use as Mineral Admixture in Portland Cement Concrete.
4. ASTM C940 – Standard test Method for Expansion and Bleeding of Freshly Mixed grout for Replaces Aggregate Concrete in the Laboratory.
5. ASTM C1017 – Standard Specification for Chemical Admixture for use in Producing Flowing Concrete.
6. ASTM C1107 – Standard Specification for Packaged Dry, Hydrailic-Cement Grout (Non-Shrink).

D. Definitions

1. Abandonment: Pipeline abandonment consist of filling or plugging portions of existing pipelines with flowable fill or grout plugs, as indicated on the drawings.
2. 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.

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STANDARD SPECIFICATIONS

ABANDONMENT OF PIPELINES

3. 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.

E. Submittals

1. Submit flowable fill mix design report.
 - a. 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.
 - b. Aggregate gradation of fill. Aggregate gradation of mix shall be used as pilot curve for quality control during production.
 - c. 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.
 - d. Fill densities and viscosities, including wet density at point of placement.
 - e. Initial time of set.
 - f. Bleeding and shrinkage.
 - g. Compressive strength.
2. 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

B. Flowable Fill

1. 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:
 - a. 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.
 - b. 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.

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STANDARD SPECIFICATIONS

ABANDONMENT OF PIPELINES

- c. Potable water: Volume and weight per cubic yard to fill. Amount of water determined by mix design testing.
 - d. 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.
 - e. 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.
 - f. Admixture: Use admixtures meeting ASTM C494 and ASTM C1017 as needed to improve pumpability, to control time of set and to reduce bleeding.
 - g. Fluidifier: Use fluidifier meeting ASTM C937 as necessary to hold solid constituents in suspension. Add shrinkage compensator if necessary.
 - h. Performance additive: Use flowable fill performance additive, if needed, to control fill properties.
2. 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.
3. Grout Plugs
- a. Cement-based dry-pack grout conforming to ASTM C1107, Grades B or C.

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STANDARD SPECIFICATIONS

ABANDONMENT OF PIPELINES

PART 3 – EXECUTION

A. Requirements by Pipe Location, Size and Depth

Pipe indicated on the drawings to be abandoned in place shall be completely filled with flowable fill.

B. Preparation

1. Notify inspection at least 24-hours in advance of grouting with flowable fill.
2. 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.

C. Equipment

1. 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.
2. Use concrete or grout pumps capable of continuous delivery at planned placement rate.

D. 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.

SECTION 02223

STANDARD SPECIFICATIONS

ABANDONMENT OF PIPELINES

E. 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.

F. 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.

SECTION 02224

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. Sheeting and shoring 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 AASHTO-2 gradation with no more than ten (10) percent by weight passing the No. 200 sieve. All rock or hard material shall pass through a 3-inch diameter ring. Broken Portland cement or asphaltic concrete shall not be considered an acceptable fill material. Fill material containing limerock shall have sufficient sand to fill the voids in the limerock. Material placed in the upper 6-inches of all backfills or fills shall not contain any stones or rocks larger than 1-inch in diameter. Limits of excavation and fill shall be as defined on the Drawings. All structural fill materials shall be obtained from off-site sources.

2.03 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. Sheetting 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.

B. Disposal: The CONTRACTOR shall be responsible to dispose of water from the dewatering operation in accordance with the Contract Documents and shall obtain all necessary permits and conform to all local regulations and codes. 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 -

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.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02222 – Excavation and Backfill for Utilities
- B. Section 02224 – Excavation and Backfill for Structures

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.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONTAMINATED SOILS

- A. The CONTRACTOR shall retain a laboratory certified by the BCEPGM 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. Payment for this work shall be in accordance with the allowance bid item for excavation, treatment and disposal of contaminated soil, included in the Schedule of Prices Bid.
- 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. Payment for this work shall be in accordance with the allowance bid item for treatment and discharge of contaminated groundwater, included in the Schedule of Prices Bid.
- 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. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- B. Section 02222 - Excavation and Backfill for Utilities
- C. Section 02224 - Excavation and Backfill for Structures
- D. Section 02930 - Sodding

1.03 PROTECTION

- A. The CONTRACTOR shall prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, utility lines, and sprinkler system. Correct damage 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

SECTION 02260

FINISH GRADING

- 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 -

SECTION 02332

LIMEROCK BASE

Part 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials, equipment and incidentals required to provide limerock base in accordance with the grades and typical sections shown on the Drawings and as specified herein.

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.

SECTION 02332

LIMEROCK BASE

Part 3 - EXECUTION

3.01 PREPARATION

- A. For new limerock base construction, or areas where pavement is to be replaced, CONTRACTOR shall remove existing subgrade as required to provide the minimum thickness of new limerock base course as indicated on plans.
- B. Compact subgrade to a density of no less than 98% of maximum density as determined by AHSHTO T-180.
- C. No separate bid item is provided in the proposal for evacuating, grading and compacting subgrade. The cost thereof shall be included in the BID schedule items.

3.02 PERFORMANCE

- A. Transporting Limerock: The limerock shall be transported to the point where it is to be used, over rock previously placed if practicable, and dumped on the end of the preceding spread. No hauling over the subgrade or dumping on the subgrade shall be done.
- B. Spreading Limerock:
 - 1. The limerock shall be spread uniformly, and all segregated areas of fine or coarse rock shall be removed and replaced with well-graded rock.
 - 2. When the specified compacted thickness of the base is greater than 6-inches, the base shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.
- C. Establish grades and cross-sections conforming to plans
 - 1. Provide a minimum of 8 inches of limerock as required to provide grades, elevations and cross sections, or as indicated on plans.
 - 2. For asphalt driveway restoration, the limerock base course shall be a minimum of 6 inches thick.
 - 3. The CONTRACTOR must determine for himself the volume of material required for the site.
- D. Compacting and Finishing Base:
 - 1. Work shall comply with Sections 200 of the FDOT Standard Specifications for Road and Bridge Construction.

SECTION 02332

LIMEROCK BASE

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 recompacting.
4. Field and laboratory testing shall be performed by an independent testing laboratory selected by the City. The first round of tests will be paid from the "Cost Allowance for Permits, Licenses and Fees". In the event compacted material does not meet the specified minimum in-place density, the CONTRACTOR shall re-compact the material and density tests will be repeated until specified minimum results are obtained. All costs of recompaction and retesting shall be borne by the CONTRACTOR at no additional cost to the CITY.

- END OF SECTION -

SECTION 02500

SURFACE RESTORATION

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. Items specified in this Section include repairs to landscaped and grassed areas that may be damaged or disturbed by CONTRACTOR activities.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Asphaltic concrete pavement.
- B. Site Grading

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.

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 regrade the work areas disturbed by his construction activities to the existing grade prior to commencement of construction.
- B. Sod shall be placed on all grassed areas disturbed by construction activities, unless otherwise indicated on the Drawings. Sodding shall be in accordance with Sections 575 and 981 of the DOT Specifications.
- C. Maintenance: Sufficient watering shall be done by the CONTRACTOR to maintain adequate moisture for optimum development of the sodded areas. Sodded areas shall receive no less than 1.5 inches of water per week.
- D. Repairs to Lawn Areas Disturbed by CONTRACTOR's Operations: Lawn areas damaged by CONTRACTOR's operations shall be repaired at once by proper sod bed preparation, fertilization and resodding, in accordance with these specifications. Regardless of the condition of the lawn area (weed content etc.) prior to the CONTRACTOR working in the area, all repairs shall be made with sod.

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 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. The CONTRACTOR, when setting plants in holes, shall 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. Trees larger than one inch and smaller than one and one-half inch caliper shall be staked with a two-inch stake, set at least 24 inches in the ground and extending to the crown of the plant. The plant shall be firmly fastened to the stake with two strands of 14 gauge soft wire, enclosed in rubber hose, or other approved covering. The wire shall then be nailed or stapled to the stake to prevent slippage.
 - 2. Medium Trees: All trees, other than palm trees, larger than one and one-half inch caliper and smaller than two and one-half inch caliper shall be staked with two or more, two-inch by two-inch stakes, eight feet long, set two feet in the ground. The tree shall be midway between the stakes and held firmly in place by two strands of 12-gauge wire, applied as specified above for single stakes. The wires shall be tightened and kept tight by twisting.
 - 3. Large Trees: All trees, other than palm trees, larger than two and one-half inch caliper, shall be braced with three or more two-inch by four-inch wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point at least six feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with two-inch by four-inch by 24-inch stake pads. In firm rock soils, Number 4 steel reinforcing rods or one-half inch pipe is acceptable.
 - 4. Palm Trees: Palm trees shall be braced with three or more two-inch by four-inch wood braces, toenailed to cleats which are securely banded at two points to the

palm, at a point at least six feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with two-inch by four-inch by 24-inch stake pads. In firm rock soils, Number 4 steel reinforcing rods or one-half inch pipe is acceptable.

- G. Pruning: All broken or damaged roots shall be cut off smoothly, and the tops of all trees shall be pruned in a manner complying with standard horticultural practice. At the time pruning is completed, all remaining wood shall be alive. All cut surfaces of one inch or more in diameter, above the ground, shall be treated with an approved commercial tree paint.
- H. Maintenance: Maintenance shall begin immediately after each plant is planted and shall continue until all work under this Contract has been completed and accepted by the CITY. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected. Settled plants shall be reset to proper grade position, planting saucer restored and dead material removed. Guys shall be tightened and repaired.
- I. Defective work shall be corrected as soon as possible after it becomes apparent. Upon completion of planting, the CONTRACTOR shall remove excess soil and debris, and repair any damage to structures, etc., resulting from planting operations.

3.03 GRAVEL BEDS

- A. Clean, grade and place geotextile prior to placing gravel in gravel beds.

- END OF SECTION -

SECTION 02507

PRIME AND TACK COATS

Part 1 - GENERAL

1.01 WORK INCLUDED

- A. The work specified in this section consists of an application of bituminous material on previously prepared base in accordance with these specifications and in conformity with the line, grades, dimensions and notes shown on the Drawings.
- 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 with the requirements specified in AASHTO Designation M 140-82.

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. 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.

SECTION 02507

PRIME AND TACK COATS

Part 4 - EXECUTION

4.01 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 insure 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.

4.02 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.

4.03 APPLICATION OF PRIME COAT

- A. After the base has been finished the full width of surface shall be swept with a power broom supplemented with hand brooms and mechanical blowers prior to the application of prime coat. Care shall be taken to remove all loose dust, dirt and objectionable matter. If deemed necessary, the base shall be lightly sprinkled with water immediately in advance of the prime coat. The prime coat shall be applied to the full width of the base.
- B. The temperature of the prime material shall be such as to insure uniform distribution. The material shall be applied with a pressure distributor as specified above. The amount to be applied shall be sufficient to coat the surface thoroughly and uniformly without any excess to form pools or to flow off the base. For limerock base, the rate of application shall not be less than 0.10 gallons per square yard; for shell base, the rate of application shall not less than 0.15 gallons per square yard.
- C. If the roadway is to be opened for use following the application of the prime material, a light uniform application of clean sand shall be applied and rolled. The sand shall be 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.

4.04 APPLICATION OF TACK COAT

SECTION 02507

PRIME AND TACK COATS

- A. In general, a tack coat will not be used on primed bases except in areas which have become excessively dirty and cannot be cleaned or where the prime has cured and lost all of its bonding effect.
- B. No tack coat shall be applied until the primed base or leveling course has been cleaned and is free from sand, dust or other objectionable material.
- C. The tack coat shall be applied with a pressure distributor as specified above. It shall be heated to a suitable consistency and applied in a thin uniform layer at the rate of between .02 gallons and .08 gallons per square yard.
- D. The tack coat shall be applied sufficiently in advance of the laying of the wearing surface to permit drying, but shall not be applied so far in advance or over such an area as to lose its adhesiveness as a result of being covered with dust or other foreign material. Suitable precautions shall be taken by the CONTRACTOR to protect the surface while the tack coat is drying and until the wearing surface is applied.

- END OF SECTION -

SECTION 02510

ASPHALTIC CONCRETE PAVEMENT

Part 1 - GENERAL

1.01 WORK INCLUDED

A. The work specified in this section consists of the construction of asphaltic concrete surface course composed of a mixture of aggregates, mineral filler and asphalt cement properly laid upon a prepared base or a newly constructed and compacted, primed and tacked roadway base course, in accordance with these specifications and in conformity with the lines, grades, thickness and typical cross section shown on the Drawings. The CONTRACTOR shall furnish asphaltic concrete surface course in the locations and to the extent indicated on the Drawings. Minimum required thickness shall be as listed below.

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 Section 334 of FDOT Standard Specifications for Road and Bridge Construction
 - (b) Type S-III asphaltic concrete surface course
 - (c) Or as otherwise required by the roadway jurisdiction and/or as indicated on the plans.

Thickness of the asphalt course shall be one and a half (1.5") inch thick minimum, or as specified on the Drawings.

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.

SECTION 02510

ASPHALTIC CONCRETE PAVEMENT

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, Section 916-1.
- B. Coarse Material: Coarse aggregate, stone or slag shall conform to the requirements of FDOT Specifications, Section 901.
- C. Fine Aggregate Material: Fine aggregate shall conform to the requirements of FDOT Specifications Section 902.
- D. Mineral Filler: Mineral filler shall conform to the requirements of FDOT Specifications, Sections 917-1 and 917-2.

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.

SECTION 02510

ASPHALTIC CONCRETE PAVEMENT

B. The job mix formula shall conform to the requirements of FDOT Specifications, Section 334. In addition, the job mix formula shall include test data showing that the material as produced meets the requirements of the following table:

<u>Mix Type</u>	<u>Minimum Marshall Stability (%)</u>	<u>Flow (0.01 in)</u>	<u>Minimum VMA (%)</u>	<u>Air Voids (%)</u>	<u>Min Effective Asphalt Content (%)</u>
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, Section 330-9. 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 330-10.

SECTION 02510

ASPHALTIC CONCRETE PAVEMENT

3.05 JOINTS

- A. Joints shall conform with the requirements of FDOT Specifications, Section 330-11.

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. Surface depressions with standing water exceeding $\frac{1}{4}$ " in depth will not be allowed by the City, and shall be repaired by the Contractor at no additional cost.
- C. 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, Section 330-14 and 330-15.
- D. "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.
- E. 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 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.

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 the requirements of Section 07920 - Sealants and Caulking.

2.04 PREFORMED JOINT FILLER

- A. Preformed joint filler shall be sponge rubber and conform to the requirements of AASHTO Designated M148, Type 1.

SECTION 02526

CONCRETE PAVEMENT, CURB AND WALKWAY

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.

SECTION 02526

CONCRETE PAVEMENT, CURB AND WALKWAY

- 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; straightedging; 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.

SECTION 02526

CONCRETE PAVEMENT, CURB AND WALKWAY

3.08 EDGING

- A. After the final finish has been applied, but before the concrete has become nonplastic, the edges of the pavement along each side of the strip being placed, on each side of construction joints and along any structure extending into the pavement, shall be carefully rounded to a 1/4 inch radius except as otherwise indicated. A well-defined and continuous radius shall be produced and a smoother, dense mortar finish obtained. All concrete shall be completely removed from the top of the joint filler.
- B. All joints shall be checked with a straightedge before the concrete has become nonplastic and, if one side of the joint is higher than the other or the entire joint is higher or lower than the adjacent slabs, corrections shall be made as necessary.

3.09 JOINTS

A. Construction Joints

- 1. Construction joints shall be located as shown on the Drawings and/or as directed by the ENGINEER.

B. Expansion Joints Around Structures

- 1. Expansion joints shall be formed by placing premolded expansion joint material about all structures and features projecting through, into or against the pavement. Unless otherwise indicated, such joints shall be 1/2 inch in width.

C. Transverse Expansion Joints

- 1. Open type transverse expansion joints shall be provided at all sidewalk returns and at 50 foot 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.

SECTION 02526

CONCRETE PAVEMENT, CURB AND WALKWAY

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

SECTION 02526

CONCRETE PAVEMENT, CURB AND WALKWAY

- 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. 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.

- END OF SECTION -

SECTION 02580
PAVEMENT MARKING

Part 1 - GENERAL

1.01 REQUIREMENT

- A. This section consists of striping pavement 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".

1.03 QUALITY CONTROL

- 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.
"BCTED" shall refer to Broward County Traffic Engineering Division.

Part 2 - PRODUCTS

2.01 PAVEMENT MARKINGS

- A. Temporary Pavement Markings shall be painted in accordance with Sections 710 and 971 of FDOT Standard Specifications for Road and Bridge Construction, and shall be installed immediately following the construction of new asphalt pavement.
- B. Permanent Pavement Markings shall be thermoplastic in accordance with Sections 711 and 971 of FDOT Standard Specifications for Road and Bridge Construction, and shall not be installed until after new asphalt has undergone a 30-day curing period.

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.

SECTION 02580

PAVEMENT MARKING

- B. The traffic stripe shall be of the specified width, with clean, true edges and without sharp breaks in the alignment. A uniform coating of paint shall be obtained and the finished stripe shall contain no light spots or paint skips. Any stripes which do not have a uniform, satisfactory appearance, both day and night, shall be corrected.
- C. All newly painted stripes, including edge stripes, shall be protected until the paint is sufficiently dry to permit vehicles to cross the stripe without damage from the tires. While the center line stripes are being painted, all traffic shall be routed away from the painting operations and the newly painted stripe. When necessary, a pilot car shall be used to protect the painting operations from traffic interference.
- D. Any portions of the stripes damaged by passing traffic or from other cause shall be repainted at the CONTRACTOR's expense.
 - 1. Thermoplastic Traffic Stripes and Markings: Thermoplastic pavement markings, including stripes, pavement messages, stop bars, directional arrows, reflective pavement markers and other miscellaneous items, will be replaced to match preconstruction conditions.. The thermoplastic compound shall be as specified in Section 711 of the D.O.T. 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.

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PAVEMENT MARKING

The adhesive application shall be of sufficient thickness so that when the marker is pressed into the adhesive, excess adhesive shall be forced out around the entire perimeter of the marker. All excessive adhesive shall be removed from in front of the reflective faces, If any adhesive or foreign matter adheres to the reflective face of the marker, the marker shall be replaced. The ENGINEER shall determine the minimum time necessary to cure the adhesive for sufficient set to bear traffic.

- END OF SECTION -

SECTION 02581

TRAFFIC SIGNS

Part 1 - GENERAL

1.01 REQUIREMENT

- A. This section consists of traffic signs as indicated on the Drawings, specified herein and as required for a complete installation.

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

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 "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.
"BCTED" shall refer to Broward County Traffic Engineering Division.

Part 2 - PRODUCTS

2.01 TRAFFIC SIGNS

- A. General: Traffic regulating signs shall conform to the colors, dimensions and requirements of the Manual on Uniform Traffic Control Devices (ANSI) and displaying the lettering and symbols indicated on the Drawings.
- B. Sign Panels and Support Members: Sign panels and support members shall conform to Aluminum Association Alloy 6061-T6.
- C. Sign Posts: Sign posts installed east of U.S. 1 shall be hot dipped galvanized steel or aluminum.
- D. Bolts: Bolts shall conform to Aluminum Association Alloy 2024-T4 with an anodic coating 0.0002-inches thick minimum and chromate sealed.

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TRAFFIC SIGNS

- E. Nuts: Nuts shall conform to Aluminum Association Alloy 6269-T9.
- F. Reflective Sheeting: Reflective sheeting shall conform to DOT Type A requirements.
- G. Construction Warning Signs: The CONTRACTOR shall install traffic and warning signs during construction in accordance with OSHA, DOT and Broward County Public Works requirements.

- END OF SECTION -

SECTION 02582

RAISED RETRO-REFLECTIVE PAVEMENT MARKERS AND BITUMINOUS ADHESIVE

Part 1 - DESCRIPTION

Place raised retroreflective pavement markers (RPMs) and adhesive, which upon installation produces a positive guidance system to supplement other reflective pavement markings.

Part 2 - MATERIALS

- 1) Use only Class B markers unless otherwise shown in the Plans.
- 2) Meet the requirements of Section 970, "Product Acceptance on the Project", of the Florida Department of Transportation's (FDOT) Standard Specifications for Road and Bridge Construction. Use only reflective pavement markers and bituminous adhesive that are listed on FDOT'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.

Part 3 - EQUIPMENT

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.

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.

Part 4 - APPLICATION

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 City.

Prior to application of adhesive, clean the portion of the bonding surface of any material which would adversely affect the adhesive.

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.

Immediately remove excess adhesive from the bonding surface and exposed surfaces of

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RAISED RETRO-REFLECTIVE PAVEMENT MARKERS AND BITUMINOUS ADHESIVE

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 City.

Install RPMs with the reflective face of the RPM perpendicular to a line parallel to the roadway centerline.

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 City. 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 City.

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.

METHOD OF MEASUREMENT

The quantities to be paid for will be the number of RPMs, furnished and installed, completed and accepted.

- END OF SECTION -

SECTION 02751 - 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 -

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 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 sytem 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 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 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

SECTION 02900

LANDSCAPING

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

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- 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.
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.

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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.
- 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 the installation of new sodding, or complete sodding of existing grassed areas that may have been damaged or disturbed by CONTRACTOR activities. This shall include, but not be limited to: fertilizing, sodding, tests and all incidentals to make the work complete.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02500 - Landscaping
- B. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- C. Section 02260 - Finish Grading

1.03 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

1.04 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.
 - 3. It shall be delivered at the site in the original sealed containers.
- B. Sod

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SODDING

1. Sod from right-of-way swales within the work area shall be replaced in-kind. Bahia sod will be accepted.
2. Sod shall be first quality, of firm texture having a compacted growth and good root development.
3. Sod shall be absolutely true to varietal type, live, fresh and free from weeds or objectionable vegetation, fungus, insects and disease of any kind. Sod shall be kept moist from the time it is field cut until it is laid at the proposed site.
4. The sod shall be as grown by a certified turf nursery and CONTRACTOR shall inform ENGINEER as to the source of the sod to be utilized prior to ordering and delivery of sod.
5. Sod shall be furnished and installed in rectangular sod strips measuring 12 to 16-inches in width of standard lengths of not less than 2 feet and delivered on pallets.

Part 3 - EXECUTION

3.01 INSTALLATION

- A. Sod shall be placed on all grassed areas disturbed by construction activities, unless otherwise indicated on the Drawings. Sodding shall be in accordance with these specifications and Sections 575 and 981 of FDOT Specifications, whichever is more stringent.
- B. Lawn areas damaged by CONTRACTOR's operations shall be repaired at once by proper sod bed preparation, fertilization and re-sodding, in accordance with these specifications. Regardless of the condition of the lawn area (weed content etc.) prior to the CONTRACTOR working in the area, all repairs shall be made with sod.
- 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 re-graded 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.

SECTION 02930

SODDING

- 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. Sufficient watering shall be done by the CONTRACTOR to maintain adequate moisture for optimum development of the sodded areas. Sodded areas shall receive no less than 1.5 inches of water per week.
- I. CONTRACTOR shall be responsible to furnish his own supply of water to the site at no extra cost. If possible, CITY shall furnish CONTRACTOR, upon request, with a source and supply of water. CONTRACTOR shall apply for temporary meter and pay CITY for water used at current utility billing rates. However, if CITY's water supply is not available or not functioning, CONTRACTOR shall be responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of, or the use of too much water, shall be CONTRACTOR's responsibility to correct.

5.02 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 re-sodded at CONTRACTOR's expense as many times as necessary to secure a good growth. In the event that the sod installation is not accepted by ENGINEER, the entire area shall be maintained and cut by CONTRACTOR until final acceptance of the sod installation.
- B. Take whatever measures are necessary to protect the sod while it is developing. These measures shall include furnishing of warning signs, barriers, or any other necessary measures of protection.

- END OF SECTION -

DIVISION 3

CONCRETE

SECTION 03210

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 intervalswithin 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 03290

JOINTS IN CONCRETE

PART 1 -- GENERAL

1.01 THE 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:

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:

CRD-C572 PVC Waterstop.

C. Commercial Standards:

ASTM A 775 Specification for Epoxy-Coated Reinforcing Steel Bars

ASTM C 920 Specification for Elastomeric Joint Sealants

ASTM D 412 Test Methods for Rubber Properties in Tension

ASTM D 624 Test Method for Rubber Property -- Tear Resistance

ASTM D 638 Test Method for Tensile Properties of Plastics

ASTM D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

ASTM D 747 Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam

ASTM D 1056 Specification for Flexible Cellular Materials -- Sponge or Expanded Rubber

ASTM D 1752 Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

ASTM D 2240

Test Method for Rubber Property -- Durometer Hardness

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 Std.</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 jointed 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 jointed 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

CAST-IN-PLACE CONCRETE, REINFORCING AND FORMWORK

Part 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide all labor, materials, equipment, fabrication, incidentals, transportation, placing and supervision necessary to complete all cast-in-place concrete work, its finishing, and all related work called for by the Contract Drawings and/or Specifications, or reasonably inferable from either or both, as needed for a complete and proper installation.
- B. Related work: Work affecting this Section includes, but is not limited to:
 - 1. Shop Drawings-Per General Conditions and as specified herein.
 - 2. Materials and storage thereof
 - 3. Reinforcing-Bar and fabric
 - 4. Accessories of every nature, including form tie system.
 - 5. Formwork and removal thereof, including shoring and reshoring
 - 6. Concrete proportions and mixes
 - 7. Placing of concrete
 - 8. Admixtures
 - 9. Joints, metal joint screeds and joint fillers
 - 10. Finishes of all types
 - 11. Protection and curing
 - 12. Patching
 - 13. Laboratory Testing

1.02 QUALITY ASSURANCE

- A. Unless otherwise indicated, all materials, workmanship and practices shall conform to the requirements of ACI 301-96 "Specifications for Structural Concrete for Buildings", except as modified by supplemental requirements hereinafter.

1.03 STANDARDS

- A. ACI 301-96 Specifications for Structural Concrete
- B. ACI 318-95 Building Code Requirements for Reinforced Concrete
- C. Florida Building Code, latest edition.
- D. ACI 117-90 Standard Specifications for Tolerances for Concrete Construction and Materials

Part 2 - PRODUCTS

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CAST-IN-PLACE CONCRETE, REINFORCING AND FORMWORK

2.01 MATERIALS

A. Materials for Concrete:

1. Cement shall conform to the following: Portland Cement ASTM C150, normal, type I or type II. Provide domestic cement of one type and from same source for entire project.
2. Mineral Admixtures:
 - (a) Fly Ash: Shall conform to ASTM C 618, with 20% maximum of total cementitious weight.
 - (b) Ground Blast Furnace Slag: Shall conform to ASTM C 989-93. 30% maximum of total cementitious weight.
3. Chemical Admixtures: The following admixtures are permitted, but require written approval from the Engineer:
 - (a) Air Entraining Admixture: Comply with ASTM C260. "Specifications for Air-Entraining Admixtures for Concrete.
 - (b) Water Reducing Admixture: Comply with ASTM C494 "Specifications for Chemical Admixtures for Concrete", Type A, and compatible with air entraining admixture.
 - (c) Water Reducing and Retarding Admixture: Comply with ASTM C494, "Specifications for Chemical Admixtures for Concrete, Type D, and compatible with air entraining admixture.
 - (d) High Range Water Reducing Admixture: Comply with ASTM C494, "Specifications for Chemical Admixtures for Concrete", Type F or G, and compatible with air entraining admixture (Including superplasticizer to reduce water content.)
 - (e) Admixtures containing added calcium chloride are not permitted.
4. Aggregates: Shall conform to ASTM C 33 and shall be quarried/mined in fresh water. Aggregates from salt water or brackish water are not permitted. Coarse aggregate size shall not exceed:

<u>Concrete member</u>	<u>Size</u>	
Walls	3/4"	67#
Beams or structural slabs not on ground	3/4"	67#
Columns and all other concrete	1"	57#
Drilling concrete pad or slabs on ground	1"	57#

5. In sanitary sewage applications, where called for in the plans and/or specifications an antimicrobial admixture as specified below shall be utilized:

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- (a) An antimicrobial agent, Con^{mic}Shield[®], or approved equal, shall be used to render the concrete uninhabitable for bacteria growth.
 - (b) Contractor shall mix the liquid antimicrobial additive with the total water content of the concrete mix design in a proportion of 1 gallon per cubic yard. In the case of repairs to damaged concrete a proportion of 2 gallons per cubic yard shall be utilized.
 - (c) In some instances all of the concrete in the structure in will receive the additive and in other instances only a portion of the concrete will receive the additive. Hence, the Contractor shall apply the additive only as directed in the specific instance.
 - (d) Contractor shall submit a letter of certification to the City, stating that the correct amount and correct mixing procedure was followed for all antimicrobial concrete.
 - (e) Con^{mic}Shield[®] antimicrobial additive shall be as manufactured by Con^{mic}Shield[®] Technologies, Inc. 541 - 10th Street NW, #233, Atlanta, GA 30318. Phone: (877)543-2094.
- B. Portland cement and reinforcing steel: Comply with ACI 301-96 and, with all modifications and supplements thereto listed in Part 3 of this specification.
- C. Burlap mats: Conform to AASHTO Specification M182. (Burleen non-staining mats.)
- D. Epoxy bonding agent: A two (2) component, solvent free, moisture insensitive structural epoxy adhesive conforming to ASTM C881-90 Type II, Sikadur 32 Hi-Mod, as manufactured by Sika Corp., Concreative 1090 Liquid by Master Builders or approved equal.
- E. Anchor bolts, nuts and washers: Conform to ASTM A449-89, hot-dip galvanized.
- F. Dovetail slots: Galvanized steel, 22 gauge, 1"x 1", with 5/8" throat, fiber filled.
- G. Forms:
- 1. Plywood Forms: PS-1, B-B Concrete Form, Class I, exterior type, mill oiled and edge sealed. Thickness shall be as required to support concrete at the rate placed, but not less than 3/4".
 - 2. Steel Forms: Uncoated steel, 3/16"-inch minimum thickness, fabricated to close tolerances, protected only by the specified release agent, braced so as not to dent, bend or dimple under wet concrete loads, vibrator impact and tool impact. Maintain steel forms in rust free condition by use of steel wool and light grinding, followed by coats of the specified release agent. Forms should be adjustable to be brought into true alignment without steps or ridges.
- H. Form release agent:

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1. For plywood forms use a natural non-petroleum base, non-staining and non-retarding release agent that will effectively prevent absorption of moisture and prevent bond with concrete, and leaves the concrete with a paintable surface.
 2. For steel forms, use an approved material that will not stain, color or otherwise affect the finish of the concrete. Form coating shall not be detectable on finished surfaces.
 3. Round column forms: Provide seamless fiber forms with the three plies nearest to the interior surface of the form deckled or scarfed and overlapped to minimize spiral gaps or seams on the column surface.
- I. Form Ties: Steel rod type with integral waterstops and cones, and with ends or end fasteners that can be removed without spalling the concrete and which leave a hole equal in depth to the required reinforcement clearance, but not less than 2 inches from the formed face of the concrete. Wire tie, banding wire and wood spreaders will not be permitted.
- J. Form Inserts:
1. Bevel or chamfer strips: Wood or non-staining plastic, 3/4" wide on each leg at exposed edges of concrete members, unless otherwise noted on plans.
 2. Tongue and Groove Joint Forms: Minimum 24 gauge with steel stakes and splice plates. Forms shall be designed for joints not to receive a poured seal.
 3. Pipe hangers and other utility supports: AISI Type 316 stainless steel.
- K. Non-Shrink Grout: Non-shrink, non-metallic grout conforming to ASTM C 1107 Grade B or Grade C only. Grout must meet ASTM C 1107 at a temperature range of 50 F to 90 F at a flowable consistency.
- L. Grout for Surface Repair and Bond Coat:
1. For repair, one part Portland cement to two parts fine sand, and a 50% of water and 50% Acryl 60 or equal (Thoroseal or Acryl Set Bonding Agent by Master Builders) to produce a stiff mortar.
 2. For bond coat, one part Portland cement to one part sand, and a 50% of water and 50% Acryl 60 or equal (Thoroseal or Acryl Set Bonding Agent) to produce a slurry mix.
- M. Moisture Barrier: Kraft paper and glass reinforcing fibers sandwiched between 2 layers of polyethylene film with a permeance rating of maximum 0.1 as per ASTM E-96, Procedure A.
- N. Preformed Expansion Joint Filler: Non-extruding type, self expanding cork, 3/4", 1", and 1½" cork (not to be used for sidewalks), conforming to plans or as otherwise

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noted on drawings, conforming to the requirements of ASTM D1752, Type II, and compatible with joint sealant compound.

- O. Joint Sealant Compound: Non-sag, 2 component, solvent free, moisture insensitive, flexible, epoxy resin conforming to the requirements ASTM C920-87 Type M, Grade NS. Additionally, the sealant must be recommended by the manufacturer to perform under continuous immersion in water.
- P. Polyurethane Elastomeric Sealant: Sikaflex-2c, NS/SL or approved equal. Provide a 2- component, premium-grade, polyurethane-based, elastomeric sealant. It is principally a chemical cure in a non-sag and self-leveling consistency. Sealant shall meet ASTM C-920 and Federal Specifications TT-S-00227E.

1. Joint Movement: +50%.

Q. Waterstops:

- 1. Volclay Waterstop-RX or approved equal. Flexible strip of bentonite waterproofing compound in coiled form.

(a) Chemical Composition:

- (1) Butyl Rubber-Hydrocarbon: 24.9% by weight; ASTM D-297.
- (2) Bentonite: 75 % by weight; SS-S-210-A.
- (3) Volatile Matter: Below 1 %; ASTM D-6.
- (4) Waterstop shall not contain any asbestos fibers or asphaltics.

(b) Physical Properties:

- (1) Specific Gravity: 1.57; ASTM D-71.
- (2) Application Temperature Range: 5-125 F.
- (3) Flash Point: 365; ASTM D 93-97.
- (4) Accelerated Aging: Maintained 99% solids.
- (5) Dimensions: 1" x 3/4" x 16'-6"

- 2. Polyvinyl chloride (PVC): Conforming to the requirements of U.S. Army Corps of Engineers Specification CRD-C-572 and of the following type:

- (a) Expansion Joints: 9-inches by 3/8-inch, ribbed center bulb.
- (b) Construction Joint: 9-inches by 3/8-inch, flat ribbed.
- (c) Only where specified on Plans at construction and expansion joints: 9-inches by 3/8-inch, split ribbed.
- (d) Install waterstops as shown as manufactured structures.

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- R. Fiber Reinforcement: Fiber reinforcement shall not be used in the concrete unless ordered by the Engineer in writing. It shall consist of 100% virgin polypropylene fibrillated fiber- dosage of 2 lbs. per cubic foot.
1. Compressive Strength: 1 psi (.006895 M Pa), ASTM C-39.
 2. Flexural Strength: 288 psi (2.0 M Pa) after 7 days, 390 psi (2.7 M Pa) after 28 days; ASTM C-78.
 3. Splitting Tensile Strength: 194 psi (1.3 M Pa) after 7 days, and 290 psi (2.0 M Pa) after 28 days; ASTM C-496.
 4. Source: Fibermesh Micro-Reinforcement System by Fibermesh Company, Division of Synthetic Industries, Inc., or approved equal.
- S. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.
- T. A shrinkage reducing admixture (Teraguard) or equivalent at the rate of 2.2% by weight of cement may be used in the concrete to meet the shrinkage limitations.
- U. To protect the concrete slab against the elements, the Engineer may direct the Contractor to spray an evaporation retarder on the finished concrete slab immediately behind the cement finishing process at no additional cost to the City. This is not a curing compound.

Part 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work.

3.02 SUPPLEMENTAL REQUIREMENTS

- A. All phases of concrete construction, including materials formwork, and all other related procedures shall comply with the most stringent allowed tolerances of ACI-301 and ACI-117 Standards (Latest Edition) - Non compliance with these standards will cause full rejection of any work done.
- B. Comply with ACI 301-96 and with all modifications and supplements thereto listed herein. In addition to the ACI Standards on finished concrete, the Engineer will only approve quality finished concrete which in his opinion is ready to receive a grout finish, paint or liquid membrane.
- C. The following modifications and supplements to ACI 301-96 shall also apply to the work.

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1. General

- (a) These specifications cover cast-in-place structural concrete for use in buildings and appurtenances, including foundations, curbs, sidewalks, concrete pavements and utility structures, water containment tanks, and piles.
- (b) Keep minimum two (2) copies of ACI 301-96 "Specifications for Structural Concrete" in field office at all times.

2. Proportioning and Design of Mixes:

- (a) General: Proportion concrete to meet properties as specified. Prepare mix designs for each type and strength of concrete. Submit with mix design the chemical admixture manufacturer's statement that the admixture proposed complies with the requirements of this specification. Where concrete of different strengths are specified for the same location, the higher strength concrete shall be used. Concrete proportions shall be established on the basis of previous field experience, or laboratory trial batches as specified in ACI 301-96 Sections 4.2.2 & 4.2.3.
- (b) Classes of Concrete:
 - (1) Structural concrete of normal weight for portions of the structure that are required to be watertight containments or tremie concrete, the water/cementitious ratio shall not exceed 0.45 if exposure is to be to fresh water.
 - (2) If the concrete is exposed to salt or brackish water, or if exposed to injurious concentrations of sulfate-containing solutions (1500 ppm or more of Sulfate in water) or other chemically aggressive solutions, use Type II cement with Rheobuild 1000 admixture by Master Builders, or approved equal; water/cementitious ratio shall not exceed 0.34.
 - (3) Other Concrete: (This would be slabs-on-grade, concrete thrust blocks, and miscellaneous concrete). The water cementitious ratio shall not exceed 0.50 to 0.55.
 - (4) Minimum $f'c$ @ 28 days shall be 4000 KSI with a Water/Cement ratio of 0.45.
 - (5) Minimum $f'c$ @ 28 days shall be 7000 KSI with a Water/Cement ratio of 0.34.
- (c) Slumps:
 - (1) All structural concrete, pumped concrete and tremie concrete shall contain a High Range Water Reducing Admixture and be designed

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with a maximum water content of 270 pounds per cubic yard. The initial water slump prior to addition of the High Range Water Reducing Admixture shall be 2-inch maximum. Concrete at point of placement shall not exceed 10-inches. Concrete shall be non-segregating.

- (2) Slabs including slabs-on-grade, and all other concrete shall have a maximum water content of 287 pounds per cubic yard and have a 5-inch maximum slump with a water reducer, or water reducer and retarder admixture added.

3. Formwork

- (a) Earth cuts are not permitted for forms for vertical surfaces. Footings, grade beams and slab edges shall be formed. Provide moisture barrier under all slabs on grade. Lap 6-inches and tape punctures.
 - (b) The contractor is responsible for the adequacy of forms and shoring including placing, fill and equipment on roof, and for safe practice in their use and removal. Submit formwork calculations, and shop drawings including shoring and reshoring. In addition, the calculations and shop drawings for formwork, shoring, and reshoring, if required by the Engineer or Building Department, shall be signed and sealed by a Professional Engineer registered in the State of Florida.
 - (c) Design forms for the loads and lateral pressures resulting from the placement and vibration of concrete and for design considerations, wind loads, allowable stresses, and other applicable requirements of the South Florida Building Code.
 - (d) Provide form facing materials as required by the specified finish of the formed surface. Do not use facing material with raised grain, torn surfaces, worn edges, patches, dents or other defects. No form may be reused more than three times without the City's approval. The maximum deflection permitted of facing materials reflected in concrete surfaces exposed to view is 1/240 of the span between structural members.
- (1) Forms shall be free from surface defects, tight to prevent leakage and braced to keep its position and shape when filled with concrete. Adjacent edges and end panels and sections shall be held together to provide accurate alignment and prevent forming ridges, fins, offsets or similar type defects in finished concrete. It shall be tight to prevent loss of water, cement or fines during placing and vibrating concrete. The bottom of the forms placed in continuous straight even footings or slabs shall be watertight to prevent loss of water, cement and fines during placement and vibration of concrete, a

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gasket may be required by the Engineer under the forms to provide water tightness at the Contractor expense. The Contractor shall not proceed to place forms for concrete work adjacent to or on top of previous placed concrete without the Engineer's approval, if the stripped forms reveals columns, walls or beams are out of level or plumb or there are cold joints or other objectionable work in the opinion of the Engineer. Contractor shall submit to the Engineer for approval, how he intends to correct or remove the defective work promptly at his expense. Contractor shall perform such corrections prior to proceeding to place concrete in the next Section.

- (e) Provide positive means of adjustment (wedges or jacks) of shores and struts, and all settlement shall be taken up during concrete placing operation. Brace forms securely against lateral deflection. Do not anchor form bracing to poured concrete floors, or make holes in floor.
- (f) Provide temporary openings in columns and wall forms to limit the free fall of concrete to five (5) feet. Place such openings at no more than eight (8) feet apart to facilitate placing and consolidation of concrete. Elephant trunks may be used to vertical heights of fifteen (15) feet for tremie and other purposes, if approved by the Engineer. Provide temporary openings at the bottom of wall and column forms and elsewhere as necessary to facilitate cleaning and observation immediately before concrete is placed. Blow formwork entirely clean of all saw dust, dirt, or other items not specifically intended to be a part of the final concrete. Any evidence of non-intended items in the forms is considered sufficient cause to stop concreting operation and/or require removal of concrete placed in such contaminated forms.
- (g) Provide inserts, conduits, boxes, sleeves, anchors, ties, bolts, hangers, dowels, thimbles, nailers, grounds and other devices in coordination with other trades.
- (h) Set anchor bolts and other embedded items accurately and hold securely until concrete is placed and set. Anchor bolts shall be galvanized and of size and length as indicated on the Contract Drawings. Bolts not sized shall be 3/4-inch diameter.
- (i) Insert galvanized dovetail anchor slot in forms, in columns, beams and slabs completely around in-fill masonry panels.
- (j) Install wall spools, wall flanges and wall anchors before placing concrete. Do not weld, tie or otherwise connect the wall spools to the reinforcing steel.
- (k) Do not use pinch bars, wrecking bars or other metal tools against as-cast concrete to wedge forms loose; use only wooden wedges carefully and gradually. Driving shall be accomplished by light tapping.

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- (l) The Contractor is responsible for the removal of forms and shores. Do not remove forms or shores before the member has attained sufficient strength to support its weight and the loads imposed, nor sooner than listed below
 - (1) Wall forms: 24 hours
 - (2) Column forms: 24 hours.
 - (3) Beam and girder side forms only (not bottom form): 24 hours.
 - (4) Beam and Girder bottom forms: 7 days minimum unless otherwise approved by the Engineer.
 - (5) Slab forms: 14 days.
 - (6) Arch centers: 7 days.
 - (7) Pan joist forms: 4 days.

4. Reinforcement

- (a) Prior to fabrication, submit for review shop drawings showing all fabrication dimensions, bar lists and location for placing of the reinforcing steel and accessories, including spacing of reinforcing, splices (lap, welded, Cadweld and/or mechanically threaded), grade of reinforcing and name of manufacturer. Note all deviations from the Contract Drawings and use the same designation mark as shown on the Contract Drawings where possible.
- (b) Reinforcing bars: ASTM A615, Grade 60, deformed bars of USA manufacturer.
- (c) Welded wire fabric: ASTM A185, galvanized.
- (d) Metal bar supports: CRSI MSP-1, Chapter 3, Class 2, Type B stainless steel protected bar supports.
- (e) Coupler Splice Devices: Cadweld, tension couplers capable of developing the ultimate strength of the bar.
- (f) Reinforcing steel upon which unauthorized welding has been done, shall be removed and replaced at no additional cost to the City.
- (g) Place reinforcing bars to the most stringent tolerances indicated in ACI 301 and ACI 117 (Latest Edition). Tolerances specified in those standards shall govern over any other reference code or standard.
- (h) All reinforcement at time concrete is placed, shall be free of mud, oil or other materials that may affect or reduce the bond. Reinforcing with rust or mill scale will not be accepted without cleaning and/or brushing to remove scale and rust.
- (i) Support rebar and mesh reinforcing for slabs on grade 1½ inches from top of slab on masonry blocks not less than 4 sq. in., having a compressive strength equal to or greater than the specified strength of the concrete being

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placed. Space blocks at no more than 4 feet apart each way for rebars, and no more than 3 feet apart for mesh reinforcement.

- (j) Support reinforcing off from formwork for columns, walls and beams with stainless steel protected bar supports. Support slab reinforcing on #5 bars, or larger, spaced at no more than 48 inches on center. Space individual high chairs no more than 48 inches apart and support bars shall not exceed 24 inches past outermost chairs.
- (k) Overlap welded wire fabric in such a manner that the overlap measured between outermost cross wires of each fabric sheet is not less than the spacing of the cross wires plus 2 inches or 6 inches, whichever is greater. Do not extend fabric through expansion and/or contraction joints, unless otherwise noted on the Contract Drawings.
- (l) The minimum clear distance between parallel bars, both vertical and horizontally, shall not be less than the nominal diameter of the bars, or less than 1½ times the maximum size of the aggregate, or 1-inch in beams, or 1½ inches in columns, whichever is greater. Where reinforcement in beams is placed in two or more layers, the upper layer shall be placed directly above the bars in the bottom layer. Misplacement, misalignment or improper length of dowels shall be sufficient cause to require removal and reconstruction of affected work.
- (m) Unless allowed by the Engineer, bending of reinforcing partially embedded in concrete is not permitted. When permitted, bending shall be in accordance with CRSI Manual of Standard Practice.

5. Joints and Embedded Items.

- (a) Provide premolded expansion joint filler strips of proper width and length as specified in the Contract Drawings. Place ½" expansion joint fillers every 20 feet in straight runs of walkways or sidewalks, at right angle turns and wherever concrete butts into vertical surfaces, unless otherwise noted on the Contract Drawings.
- (b) Provide waterstops in all construction joints, unless otherwise indicated on the Contract Drawings.
- (c) Join all waterstops at all intersections so that a continuous seal is provided. Center the waterstop in the joint. Hold water stop positively in correct position. In the event of damage to the waterstop, repair the water stop in an acceptable manner. Vibrate concrete to obtain impervious concrete in the vicinity of all joints.
- (d) Install waterstop in accordance with instructions of the manufacturer. Prior to use of the waterstop material in the field, submit to the Engineer for approval a sample of each size and shape to be used. Fabricate sample so that the

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material and workmanship represent in all respects the fittings to be furnished under this Specification.

- (e) Place all sleeves, inserts, anchors, and other embedded items prior to placing concrete. Anchors and bolts cast in concrete shall be hot dip galvanized or stainless steel. Where permitted by the Engineer, concrete expansion bolts shall be stainless steel and of the wedge anchor type. Take all necessary precautions to prevent embedded items from being displaced, broken or deformed during concreting operation. Protect drains from intrusion of concrete.

6. Placing:

- (a) Equipment for mixing and transporting concrete must be clean. Forms shall be thoroughly clean and damp, and reinforcing shall be secured in place. Runways for transporting concrete shall not rest on reinforcing. When concrete is placed against earth, sprinkle sufficiently before placing.
- (b) Deposit of concrete in forms no longer than ninety (90) minutes after the initial design water has been added to the cement and aggregates. Concrete which cannot be so placed shall not be used and shall be wasted. **No additional water shall be added**. No retempering with water is permitted.
- (c) In addition to the requirements of ASTM C94, the concrete delivery tickets shall indicate the cement content and water/cement ratio.
- (d) During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection and curing. Comply with ACI 305R "Hot Weather Concreting" recommendations.
- (e) Do not place concrete in forms unless the water level is below the concrete to be placed, even if it is necessary to maintain the dewatering, or under rain.
- (f) Do not place concrete under water except for tremie concrete as called for on the Contract Drawings. Submit for approval plan and details of means and methods for installation of seal tremie concrete prior to commencement of work. Seal concrete which subsequently fails to perform, shall be repaired or replaced at no additional cost to the City.
- (g) Place seal concrete under water in the space in which it is to remain, by means of a tremie, a closed-bottom dump bucket of not less than one cubic yard capacity, or other approved method, and do not disturb after it is deposited. Deposit all seal concrete in one continuous pour. Do not place concrete in running water. Design all formwork, to retain concrete under water, to be watertight. Submit shop drawings for the design of formwork and excavation sheeting signed and sealed by a Florida Registered Professional Engineer.

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- (h) The tremie shall consist of a tube having a minimum inside diameter of ten (10) inches, and shall be constructed of sections having tight joints. No aluminum parts which have contact with the concrete will be permitted. The discharge end shall be entirely seated at all times and the tremie tube kept full to the bottom of the hopper. When a batch is dumped into the hopper, the tremie shall be slightly raised (but not out of the concrete at the bottom) until the batch discharges to the bottom of the hopper, after which the flow shall be stopped by lowering the tremie. The means of supporting the tremie shall be such as to permit the free movement of the discharge end over the entire top surface of the work, and shall permit it being lowered rapidly when necessary to choke off or retard the flow. The flow shall preferably be continuous and in no case shall be interrupted until the work is completed. Exercise special care to maintain still water at the point of deposit.
- (i) When the concrete is placed by means of a bottom dump bucket, the bucket shall be lowered gradually and carefully until it rests upon the concrete already placed. The bucket shall then be raised very slowly during the discharge travel; the intent being to maintain, as nearly as possible, still water at the point of discharge and to avoid agitating the mixture. Aluminum buckets will not be permitted.
- (j) Do not commence pumping, to dewater a sealed cofferdam, until the seal has set sufficiently to withstand the hydrostatic pressure, and in no case earlier than 72 hours after placement of concrete.
- (k) Notify Engineer a minimum of 24 hours prior to concreting and request a specific time for observation of reinforcing and formwork for portions of concrete work to be placed. No observation will be made by the Engineer until rebar installation for all work to be done and all formwork has been completed and approved by the Contractor's field superintendent. Do not order concrete until all correction and additions indicated by the Engineer have been made. Should the Engineer's observation reveal that work is improperly prepared and an additional observation will be required, he will so inform the Contractor and all above requirements shall also govern.

7. Repair of Surface Defects:

- (a) Repair all concrete surface defects, which includes, but not limited to cracks, tie holes (no plastic cones), uneven holes, honey combs, rough frame work and other objectionable conditions deemed unacceptable to the Engineer immediately after form removal. This repair work is to be done for all concrete expose surfaces, liquid applied surface or painted surfaces in or out of the water. Repair all cracks and defects in the concrete floors, beams, joists, columns, and other structural members, roof and walls, to the

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satisfaction of the Engineer, that may occur up to one year after acceptance of work regardless of the cause. Test unformed, surfaces such as monolithic slabs, for smoothness and verify placement tolerances specified for each surface and finish. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness. Repair unformed surfaces that contain surface defects which affect durability of concrete. Surface defects, as such, include cracking, cracks which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets and other objectionable and rough conditions.

- (b) Proprietary compounds for adhesion or as patching ingredients may be used, if approved by the Engineer. All structural repair of surface defects to be made require the approval of the Engineer, as to the method and procedure. Approval of the completed work must be obtained from the Engineer.

8. Finishing of Formed Surfaces.

- (a) Apply rough form finish to exterior walls below grade not exposed to water.
- (b) Apply smooth form finish to exterior and interior walls and columns exposed to water.
- (c) Apply smooth form finish to interior walls and underside of floors, stairs and slabs.
- (d) In addition to the smooth form finish, apply a grout cleaned finish to concrete walls and surfaces exposed to public view and underside of formed floors, stairs or slabs.
- (e) Apply a rubber float grout mix to properly prepared concrete surface, only when approved by the Engineer. Mix shall have one part Portland cement to two parts fine sand in a 50% water and 50% Acryl #60 (Thoroseal or Acryl Set) mix or Acryl Set by Master Builders. Make a 10' by 10' sample on the concrete wall for the approval of the Engineer. Finished surface shall be a non dusting hard finish, when scratched with a ¼" metal edge.
- (f) Finish concrete surface, interior or exterior, below or above water shall include all:
 - (1) Exposed concrete.
 - (2) Grout finished concrete.
 - (3) Painted surface concrete.
 - (4) Liquid membrane finished concrete shall comply with manufacturer's requirements.

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- (5) The entire surface of finished concrete shall have a smooth uniform surface, there shall be no offsets, visually bulges, or wavering in the finished surfaces. The joints must be accurately aligned, they cannot be uneven or in or out, a higher and lower, there shall be no fins, projection or unevenness between forms.
- (6) If after stripping the forms the Engineer determines that the finished concrete does not comply with any or all of the above requirements, the Contractor shall submit his proposal in writing to the Engineer as to his methods of correcting the work at no added cost to the City, which shall include, but not limited to all grinding of fins, projections, unevenness between joints, form high spots and uneven spots.
- (7) In addition to all other requirements, concrete surfaces exposed to public view, irrespective of size, area or location shall be completely clean and free of: (1) Stains of any nature, (2) Parts of forms or other wood of any nature, (3) laitance, (4) "Run-downs" of leaked water from secondary pours, (5) Nails, (6) Strips, (7) Ties and (8) all other extraneous, deleterious materials and/or substances which may affect the finished appearance and condition of exposed concrete. Surfaces not meeting the above requirements are to be repaired and treated at no additional cost to the City.

9. Slabs

- (a) Unless otherwise noted on the Contract Drawings, place strips alternately at maximum 20 feet center-to-center and to align with column centerline. Do not place adjacent strips until elapse of twenty four hours after first strip is placed. Place slabs on grade by the "strip-cast" method. Method to be reviewed by the Engineer. Provide saw-cut joints at maximum 20 feet center-to-center and to align with column center lines within four hours of final finishing.
- (b) Provide doveled construction joints where shown on the Contract Drawings.
- (c) Provide a hard steel troweled finish, free from trowel marks and irregularities, to slabs and floors.
- (d) Provide a light hair-broom finish to exterior slabs and floors exposed to public view. Leave hair-broom lines parallel to direction of the slab drainage.
- (e) Provide a stiff bristle broom finish to slabs and floors with slopes greater than 10 percent. Leave broom lines parallel to slope drainage.
- (f) Finish exposed edges of slabs, floors and tops of walls with a ¼-inch radius edge unless a chamfer is called for on the Contract Drawings.

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10. Curing and Protection

- (a) Comply with ACI 305 "Hot Weather Concreting", Chapter 4, with the supplements and modifications to ACI 301 listed herein.
- (b) Only concrete water curing for not less than 7 days (24 hours/day continuously) will not be accepted; Burlen mats shall be used in curing. Water cure by ponding or continuous sprinkling covering complete surface with minimum runoff. The application of water to wall may be interrupted for grout cleaning only over the areas being cleaned at the time, and the concrete surfaces shall not be permitted to become dry during such interruption.
- (c) Begin all water curing as soon as concrete is set and concrete will not be damaged. Keep concrete and wall forms wet the first 24 hours. Remove forms as indicated in Formwork, Section 3.02-C.4, and continue with 7 day water curing. Recoat damaged surfaces subject to heavy or surfaces damaged by construction procedures within 3 hours of damage. Method of repair shall be approved by the Engineer.

11. Testing

- (a) Testing laboratory will be selected and paid for by the City. Send results of all tests to the City and to the Contractor. The Contractor shall notify the Testing laboratory at least 24 hours before each concrete placing.
- (b) Obtain and mold 3 specimens for each fifty (50) cu. yds., or fraction thereof, of each class of concrete placed each day or as directed by the Engineer.
- (c) Cure specimens from each sample in accordance with ASTM C31. Record in test report any deviations from this Standard.
- (d) Test specimens in accordance with ASTM C39. Test one specimen at twenty eight (28) days for acceptance and, one specimen at three (3) days and seven (7) days respectively, for information. If one specimen in a test manifests evidence of improper sampling, molding or testing, it shall be discarded and the strength of the remaining cylinders shall be considered the test result.
- (e) Contractors Superintendent shall color code on a set of structural drawings the extent of days work and date to conform to cylinders test.
- (f) Perform slump test at discharge of mixer, one for each strength test in accordance with ASTM C143. In the event slump is excessive, testing laboratory will immediately notify the Contractor's superintendent and the Engineer's representative on site. The Contractor shall then reject all concrete with excessive slump and/or deposit time.

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- (g) Drying Shrinkage Test: A drying shrinkage test shall be conducted on the preliminary trial batch with the maximum water-cementitious materials ratio used to qualify each proposed concrete mix design using the concrete materials, including admixtures, that are proposed for the project. Three test specimens shall be prepared for each test. Drying shrinkage specimens shall be 4 x 4 x 11 inch prisms with an effective gauge length of 10 inches fabricated, cured, dried, and measured in accordance with ASTM C 157 except with the following modifications:
- (1) Specimens shall be removed from the molds at an age of 23 hours \pm 1 hour after trial batching, shall be placed immediately in water at 73° F \pm 3°F for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in lime-saturated water as specified in ASTM C157. Measurement to determine expansion expressed as a percentage of original length shall be taken at age 7 days. The length at 7 days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity controlled room maintained at 73° F \pm 3°F and 50% \pm 4% relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be reported separately for 7, 14, and 21 days \pm 4 hours of drying from "0" day after 7 days of moist curing.
 - (2) Drying shrinkage deformation for each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age. Results of the shrinkage test shall be reported to the nearest 0.001 percent. If drying shrinkage of any specimen deviates from the average for that test age more than 0.004 percent, the results for that specimen shall be disregarded.
 - (3) The average drying shrinkage of each set of test specimens cast in the laboratory from a trial batch as measured at the 21 days drying age shall not exceed 0.036 percent and 0.042 percent at the 28-day drying stage for all concrete.
 - (4) The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 25 percent.
 - (5) If the required shrinkage limitation is not met during construction, the Contractor shall take any or all of the following actions at no additional cost to the Owner, for securing the specified shrinkage requirements. These actions may include changing the source or aggregates, cement and/or admixtures, including Tetra Guard AS 20 or approved equal;

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reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage.

- (6) Alkali-aggregate reactivity potential shall be determined in accordance with Appendix XI of ASTM C 33. Aggregates shall be tested in accordance with ASTM C 289 and C295 to determine potential reactivity. Aggregates which do not indicate a potential for alkali reactivity or reactive constituents may be used without further testing. Aggregates which indicate a potential for alkali reactivity shall be further tested in accordance with ASTM C227 or C1105, as appropriate, using a cement containing less than 0.6 percent alkalis. At the discretion of the Engineer, testing in addition to that indicated in Appendix XI of ASTM C33 may be performed on potentially reactive aggregates. Nonreactive aggregates shall be imported if, in the opinion of the Engineer, local aggregates exhibit unacceptable potential reactivity.

12. Evaluation and Acceptance of Concrete

- (a) If tests are insufficient or inadequate, test and evaluate by core tests. Failure of any concrete cylinder to meet specified requirements shall be deemed as non-complying and costs of additional tests to determine the adequacy or inadequacy shall be borne by the Contractor. Concrete rejected for any reason is to be removed and replaced, including labor, forms and reinforcing, to meet specifications at no additional cost to the City and no additional time extension.

13. Additional Requirements

- (a) Submit shop drawings as required per General Conditions and elsewhere in these specifications. Prime Contractor shall check and approve all shop drawings prior to submission. Do not fabricate any item requiring shop drawings until approval of shop drawings has been granted by the City. Partial shop drawings are not accepted, submit drawings for complete submittal.
- (b) Provide precast or cast-in-place reinforced concrete lintels at all masonry openings and sills at all windows. Reinforce to suit loads and span. Provide minimum 8" bearing at each end and, pour integral with columns where opening abuts columns.

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- (c) Sidewalks in R.O.W.: Sidewalks shall be poured-in-place concrete slabs and either 4"-thick, or 6"-thick across driveways and within areas that may experience vehicular traffic. Use 3000 psi concrete, with continuous 8" deep thickened slab edges. Isolate walks from vertical surfaces with ½" expansion joint material. Provide ½" expansion bituminous joint material flush with top of concrete slabs at 20 feet on center and tooled joints at 5 feet on center. Tool all open edges to a smooth radius and all edges adjacent to the forms.

- END OF SECTION -

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 ACI530 and ACI530.1.
- B. Where references are made to standards, the latest edition of the listed standard shall apply.

1.06 DELIVERY, STORAGE, AND HANDLING

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MORTAR

- 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. Salt water 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.

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MORTAR

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 80o F. Discard all mortar not used within these limits.

- END OF SECTION -

SECTION 03315

GROUT

Part 1 - GENERAL

1.01 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all materials for grout in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished grout, in accordance with the requirements of the Contract Documents.
- B. The following types of grout shall be covered in this Section
 - 1. Non-Shrink Grout: This type of grout is to be used wherever grout is shown in the Contract Documents, unless another type is specifically referenced.
 - 2. Cement Grout
 - 3. Epoxy Grout
 - 4. Topping Grout and Concrete Fill

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Specifications, codes, and standards shall be as specified in Section 03300 - Cast In Place & Precast Concrete and as referred to herein.
- B. Commercial Standards:

CRD-C 621	Corps of Engineers Specification for Non-shrink Grout
ASTM C 109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or 50-mm Cube Specimens)
ASTM C 531	Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical- Resistant Mortars, Grouts, and Monolithic Surfacing
ASTM C 579	Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfacing
ASTM C 827	Test Method for Early Volume Change of Cementitious Mixtures
ASTM D 696	Test Method for Coefficient of Linear Thermal Expansion of Plastics

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GROUT

1.04 CONTRACTOR SUBMITTALS

- A. The CONTRACTOR shall submit certified test results verifying the compressive strength, shrinkage, and expansion requirements specified herein; and manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of non-shrink and epoxy grout used in the work.

1.05 QUALITY ASSURANCE

A. Field Tests:

1. Compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter as selected by the ENGINEER to insure continued compliance with these specifications. The specimens will be made by the ENGINEER or its representative.
2. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C 109 at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at 7 days, 28 days, and each additional time period as appropriate.
3. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C 579, Method B, at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at 7 days, and each earlier time period as appropriate.
4. All grout, already placed, which fails to meet the requirements of these specifications, is subject to removal and replacement at the cost of the CONTRACTOR.
5. The cost of all laboratory tests on grout will be borne by the OWNER, but the CONTRACTOR shall assist the ENGINEER in obtaining specimens for testing. However, the CONTRACTOR shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications. The CONTRACTOR shall supply all materials necessary for fabricating the test specimens.

- B. Construction Tolerances: Construction tolerances shall be as specified in the Section 03300 - Cast In Place & Precast Concrete, except as modified herein and elsewhere in the Contract Documents.

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GROUT

Part 2 - PRODUCTS

2.01 CEMENT GROUT

- A. Cement Grout: Cement grout shall be composed of one part cement, three parts sand, and the minimum amount of water necessary to obtain the desired consistency. Where needed to match the color of adjacent concrete, white portland cement shall be blended with regular cement as needed. The minimum compressive strength at 28 days shall be 4000 psi.
- B. Cement grout materials shall be as specified in Section 03300 - Cast In Place & Precast Concrete.

2.02 PREPACKAGED GROUTS

A. Non-Shrink Grout:

- 1. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout specified herein shall be that recommended by the manufacturer for the particular application.
- 2. Class A non-shrink grouts shall have a minimum 28 day compressive strength of 5000 psi; shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C-827; and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.
- 3. Class B non-shrink grouts shall have a minimum 28 day compressive strength of 5000 psi and shall meet the requirements of CRD C 621.
- 4. Application:
 - (a) Class A non-shrink grout shall be used for the repair of all holes and defects in concrete members which are water bearing or in contact with soil or other fill material, grouting under all equipment base plates, and at all locations where grout is specified in the contract documents; except, for those applications for Class B non-shrink grout and epoxy grout specified herein. Class A non-shrink grout may be used in place of Class B non-shrink grout for all applications.
 - (b) Class B non-shrink grout shall be used for the repair of all holes and defects in concrete members which are not water-bearing and not in contact with soil or other fill material, grouting under all base plates for structural steel members, and grouting railing posts in place

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GROUT

B. Epoxy Grout:

1. Epoxy grout shall be a pourable, non-shrink, 100 percent solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged. Epoxy grout shall be BurkEpoxy Anchoring Grout by The Burke Company.
2. The chemical formulation of the epoxy grout shall be that recommended by the manufacturer for the particular application.
3. The mixed epoxy grout system shall have a minimum working life of 45 minutes at 75 degrees F.
4. The epoxy grout shall develop a compressive strength of 5000 psi in 24 hours and 10,000 psi in seven days when tested in accordance with ASTM C 579, Method B. There shall be no shrinkage (0.0 percent) and a maximum 4.0 percent expansion when tested in accordance with ASTM C 827.
5. The epoxy grout shall exhibit a minimum effective bearing area of 95 percent. This shall be determined by a test consisting of filling a 2-inch diameter by 4-inch high metal cylinder mold covered with a glass plate coated with a release agent. A weight shall be placed on the glass plate. At 24 hours after casting, the weight and plate shall be removed and the area in plan of all voids measured. The surface of the grout shall be probed with a sharp instrument to locate all voids.
6. The peak exotherm of a 2-inch diameter by 4-inch high cylinder shall not exceed 95 degrees F when tested with 75 degree F material at laboratory temperature. The epoxy grout shall exhibit a maximum thermal coefficient of 30×10^{-6} inches/inch/degree F when tested according to ASTM C 531 or ASTM D 696.
7. Application: Epoxy grout shall be used to embed all anchor bolts and reinforcing steel required to be set in grout, and for all other applications required in the Contract Documents.

SECTION 03315

GROUT

2.04 TOPPING GROUT AND CONCRETE FILL

- A. Grout for topping of slabs and concrete fill for built-up surfaces of tank, channel, and basin bottoms shall be composed of cement, fine aggregate, coarse aggregate, water, and admixtures proportioned and mixed as specified herein. All materials and procedures specified for normal concrete in Section 03300 - Cast In Place & Precast Concrete shall apply except as noted otherwise herein.
- B. Topping grout and concrete fill shall contain a minimum of 564 pound of cement per cubic yard with a maximum water cement ratio of 0.45. Where concrete fill is thicker than 3 inches, "Cast-in-Place Concrete," may be used when accepted by the ENGINEER.
- C. Coarse aggregate shall be graded as follows:

<u>U.S. STANDARD SIEVE SIZE</u>	<u>PERCENT BY WEIGHT PASSING</u>
1/2"	100
3/8"	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 30	0

- D. Final mix design shall be as determined by trial mix design under supervision of the approved testing laboratory.
- E. Strength: Minimum compressive strength of topping grout and concrete fill at the end of 28 days shall be 3000 psi.

2.05 CURING MATERIALS

- A. Curing materials shall be as specified in Section 03300 - Cast In Place & Precast Concrete for cement grout and as recommended by the manufacturer of prepackaged grouts.

2.06 CONSISTENCY

- A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as specified herein for the particular application.
- B. The slump for topping grout and concrete fill shall be adjusted to match placement and finishing conditions but shall not exceed 4 inches.

SECTION 03315

GROUT

2.07 MEASUREMENT OF INGREDIENTS

- A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.
- B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

Part 3 - EXECUTION

3.01 GENERAL

- A. All surface preparation, curing, and protection of cement grout shall be as specified in Section 03300 - Cast In Place & Precast Concrete. The finish of the grout surface shall match that of the adjacent concrete.
- B. The manufacturer of Class A non-shrink grout and epoxy grout shall provide on-site technical assistance upon request.
- C. Base concrete or masonry must have attained its design strength before grout is placed, unless authorized by the ENGINEER.

3.02 GROUTING PROCEDURES

- A. Prepackage Grouts: All mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.
- B. Base Plate Grouting
 - 1. For base plates, the original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a one-inch thickness of grout or a thickness as shown on the Drawings.
 - 2. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout. The mixture shall be of a trowelable consistency and tamped or rodded solidly into the space between the plate and the base concrete. A backing board or stop shall be provided at the back side of the space to be filled with grout. Where this method of placement is not practical or where required by the ENGINEER, alternate grouting methods shall be submitted for acceptance by the ENGINEER.
- C. Topping Grout:

SECTION 03315

GROUT

1. All mechanical, electrical, and finish work shall be completed prior to placement of topping or concrete fill. The base slab shall be given a roughened textured surface by sandblasting or hydroblasting exposing the aggregates to ensure bonding to the base slab.
2. The minimum thickness of grout topping and concrete fill shall be one inch. Where the finished surface of concrete fill is to form an intersecting angle of less than 45 degrees with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3-1/2-inches wide by 1-1/2-inches deep.
3. The base slab shall be thoroughly cleaned and wetted prior to placing topping and fill. No topping concrete shall be placed until the slab is complete free from standing pools or ponds of water. A thin coat of neat Type II cement grout shall be broomed into the surface of the slab just before topping of fill placement. The topping and fill shall be compacted by rolling or tamping, brought to established grade, and floated. Grouted fill for tank and basin bottoms where scraping mechanisms are to be installed shall be screeded by blades attached to the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment manufacturer after the grout is brought to the established grade.
4. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.
5. The surface shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping and fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement or mixture of dry cement and sand shall be applied to the surface.

SECTION 03315

GROUT

3.04 CONSOLIDATION

- A. Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

- END OF SECTION -

SECTION 03375

FLOWABLE FILL

Part 1 - GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the requirements for flowable fill used for trenches, support for pipe structures, culverts, utility cuts and other works where cavities exist and where firm support is needed for pavements and structural elements. Flowable fill may also be used to fill water and sewer lines, and fuel tanks placed out of service, and at other locations approved by the Engineer of Record.

Part 2 - PRODUCTS

2.01 MATERIALS

The materials used shall conform with the requirements specified in Division III of the F.D.O.T. Standard Specifications for Road and Bridge Construction, latest edition, and herein. Specific references are as follows:

- A. Portland Cement (Types I, II or 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.

SECTION 03375

FLOWABLE FILL

- 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:

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 PRODUCTION AND PLACING

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.

SECTION 03375

FLOWABLE FILL

3.04 ACCEPTANCE

- A. The flowable fill shall be proportioned and placed as specified herein. In general, the strength desired is the maximum hardness that can be excavated at a later dated using conventional excavating equipment. No curing protection is required.
- 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 F.D.O.T. approval.

- END OF SECTION -

SECTION 03400
PRECAST CONCRETE

Part 1 - GENERAL

1.01 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the precast concrete work in accordance with the Contract Documents.
- B. This Section covers the design, fabrication, delivery and installation of all precast concrete units, including connections, complete, in place, as shown and specified.
- C. Precast concrete units shall be designed and fabricated by an experienced and acceptable precast concrete manufacturer. The manufacturer shall have been regularly and continuously engaged in the manufacture of precast concrete units similar to that indicated in the project specifications or drawings for at least 5 years.

1.02 CONTRACTOR SUBMITTALS

- A. Shop Drawings:
 - 1. Shop drawings shall show details in accordance with ACI 315 and ACI 318 including installation details and design computations.
 - 2. Shop drawings, including design computations, shall be stamped and signed by a structural engineer registered in the State and shall be approved by the ENGINEER.
 - 3. Shop Drawings: Showing all elevations, dimensions, horizontal and vertical sections, openings, inserts, reinforcing, anchorage devices, details, design computations, and other requirements for each different type of panel to be incorporated into the portion of the project covered by the submittal. Drawings shall be 24 inches x 36 inches maximum.
- B. Test Reports: Tests for compressive strength of concrete shall be performed by an independent commercial testing laboratory. Copies of test reports including all test data and all test results shall be submitted.
- C. Certificates of Compliance: Certificates of compliance shall be submitted attesting that materials and products meet or exceed specified requirements.
- D. Manufacturer's Qualifications: Prior to commencing operations, a statement shall be submitted giving the qualifications of the precast concrete Manufacturer, and evidence that the Manufacturer and plant are PCI certified.

SECTION 03400

PRECAST CONCRETE

1.04 QUALITY ASSURANCE

- A. General Requirements: Design members under direct supervision of a professional structural engineer experienced in design of precast concrete units, registered in the State and conforming to requirements of PCI MNL-121 and to ACI 318.
 - 1. Precast Manufacturer and erectors shall be qualified in accordance with PCI MNL-117 and MNL-116.
 - 2. Welding shall be in accordance with AWS D1.1, AWS D12.1, AWS B2.1, and AWS A5.4.

1.05 DESIGN REQUIREMENTS

- A. General: The precast structure and connection design shall conform to all applicable codes and Specification for the Design, Fabrication and Erection of civil concrete structures
- B. Connections: Prior to submitting shop drawings, the CONTRACTOR shall verify the precast connection designs shown against the aforementioned and following design criteria and provide any additional materials necessary to meet the design conditions if applicable.
- C. Concrete Mix: The concrete mix shall be as stated on section 03300, "Cast-in-Place Concrete, Reinforcing and Formwork".

1.06 DELIVERY, STORAGE AND HANDLING

- A. General: Precast members shall be handled to position consistent with their shape and design; they shall be lifted and supported from design incorporated support points and provided with strong backs and other devices as required. Lifting or handling equipment shall be capable of maintaining units during manufacture, storage, transportation, erection, and in position for fastening.
- B. Blocking and supports, lateral restraints and protective materials during transport and storage shall be clean, nonstaining, without causing harm to exposed surfaces, including temporary support to prevent bowing and warping. Lateral restraints shall be provided to prevent undesirable horizontal movement. Edges and exposed faces of members shall be protected to prevent straining, chipping, or spalling of concrete.
- C. Units shall be marked with date of production and final position in structure in location not visible after erection.
- D. Precast units shall be stored off the ground in a manner to prevent warpage and they shall be protected from weather, marring, and overload.

Part 2 - EXECUTION

SECTION 03400
PRECAST CONCRETE

2.01 INSTALLATION

- A. Examination: The CONTRACTOR shall verify that building structure, anchors, devices, and openings are ready to receive work of this Section. Beginning of installation means acceptance of existing condition.
- B. Preparation: The CONTRACTOR shall provide for erection procedures and induced loads, during erection, maintain temporary bracing in place until final support is provided, provide necessary hoisting equipment and safety and protective devices.

2.02 CLEANING

- A. Not sooner than 72 hours after joints are sealed, faces and other exposed surfaces of precast units shall be cleaned using a cleaning detergent recommended by the sealer manufacturer and water applied with a soft bristle brush, and thoroughly rinsed using clean water or other approved procedures.
- B. Units shall be cleaned when temperature and humidity conditions are such that surfaces dry rapidly (e.g., 70 degrees F and rising, 50 percent RH or less).
- C. Discolorations which cannot be removed by these procedures shall be considered defective work, and repaired or replaced as directed by ENGINEER.

2.03 PROTECTION

- A. Adjacent surfaces shall be protected from damage during sealing and cleaning operations and against damage, disfiguration or discoloration from subsequent operations. Noncombustible shielding shall be used during welding operations.

- END OF SECTION -

DIVISION 7
SEALANTS AND CAULKING

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

SECTION 07920

SEALANTS AND CAULKING

- A. General: Submittals shall be in accordance with Section 01300 - Contractor 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 - Contractor 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.
 - (1) 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.
 - (2) 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.

SECTION 07920

SEALANTS AND CAULKING

- (3) 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.

- (1) 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.

**Products Research & Chemical Corp. "RC-2SL"
Bostic "Chem-Calk 550"**

- (2) 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.

SECTION 07920

SEALANTS AND CAULKING

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:

**Sisalkraft "Moisture-stop"
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.

SECTION 07920

SEALANTS AND CAULKING

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 watertightness, 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.

SECTION 07920

SEALANTS AND CAULKING

- 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

SECTION 07920

SEALANTS AND CAULKING

- 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 -

DIVISION 15
MECHANICAL

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".

SECTION 15008

A-2000 PVC DRAINAGE PIPE

- 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

2.01 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.

2.02 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

SECTION 15008

A-2000 PVC DRAINAGE PIPE

compound having a minimum cell classification of 12454 as defined in ASTM specification d1784.

2.03 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.

2.04 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..

2.05 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

3.01 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.

3.02 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.

SECTION 15008

A-2000 PVC DRAINAGE PIPE

3.03 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.

SECTION 15008

A-2000 PVC DRAINAGE PIPE

3.05 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.

3.06 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 -

Contech A-2000™ products

A2™ Liner Pipe for rehabilitating aging structures

Using the proven double wall A-2000 design, Contech developed A2 Liner Pipe for sliplining deteriorating pipelines, eliminating the need for disruptive open trench replacement.

A2™ Casing Liner Pipe for crossing under highways/railroads

Crossing under a highway or railroad is common with new sanitary or storm sewer construction. Typically, crossings are accomplished by boring and installing a casing pipe. The sewer (carrier) pipe is then installed inside the casing.

By using the “no-bell,” constant outside diameter design of A2 Liner Pipe for the carrier pipe, downsizing of the casing can result in a significant cost saving. In addition, A2 Liner Pipe can be supplied with runners (spacers) already attached, eliminating the need and cost to attach them in the field.

A-2000™ perforated pipe for subdrainage systems

Contech A-2000 perforated pipe (4”-36” diameters) has several important features that make it the designer’s first choice for subsurface drainage systems:

- 46 psi pipe stiffness for deflection control.
- Smooth interior for improved hydraulic capacity.
- Double wall design that provides essential beam strength for improved alignment and installation grade control.
- Positive gasketed jointing system.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech’s portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treatment products.

For more information, call one of Contech’s Regional Offices located in the following cities:

Ohio (Corporate Office)	513-645-7000
Colorado (Denver)	720-587-2700
Florida (Orlando)	321-348-3520
Maine (Scarborough)	207-885-9830
Maryland (Baltimore)	410-740-8490
Oregon (Portland)	503-258-3180
Texas (Dallas)	972-590-2000

**Visit our web site: www.ContechES.com
800.338.1122**

A-2000™ Drainage Pipe

Contech PVC double-wall pipe is the latest in drainage pipe technology and engineering design. A-2000 Drainage Pipe, available in 12”-36” diameters, combines the proven durability and corrosion resistance of PVC, plus a smoother interior for improved hydraulics, tight rubber gasketed joints, light weight and long lengths (20’) for easier handling and less costly installation.

Contech A-2000 Storm Sewer Pipe is manufactured per ASTM F949, F794 and AASHTO M304. When designed in accordance with AASHTO LRFD Section 12 methodology and using 50-year material properties with Class I or Class II backfill per ASTM D2321 compacted to 95% standard Proctor density, the maximum allowable heights of cover for A-2000 exceed 50’ while the minimum cover for highway loading is 12”.

Contech products can solve most sewer or drainage problems. Their strength, durability and economy are proven with nearly a century of research and field performance.

A-2000™ PVC Pipe for Sanitary Sewers

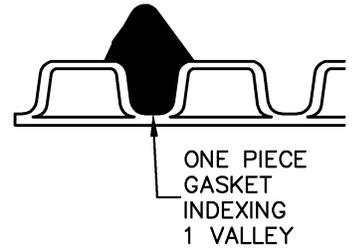
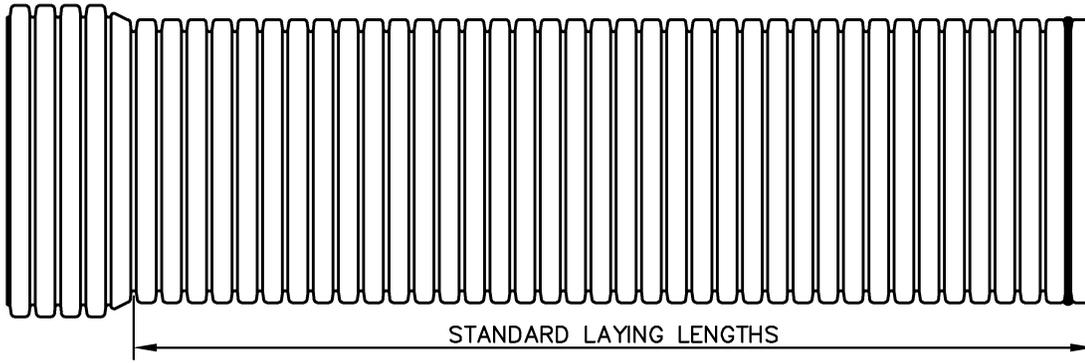
A-2000 is a seamless profile wall pipe extruded with a smooth interior and corrugated exterior. Made from polyvinyl chloride (PVC) compound, 12454, the most widely accepted sewer pipe material, A-2000 provides excellent durability and resistance to abrasion and scour. It withstands corrosive attack from both acidic and alkaline soils and is unaffected by chemicals found in normal sewage.

Engineered for gravity flow applications to installed depths exceeding 30 feet*, A-2000 should be specified whenever you consider using PVC sewer pipe. It has passed rigorous testing and meets the requirements of ASTM Specifications F949 and F794.

Your Local Sales Office is:

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS AN EXPRESSED WARRANTY OR AN IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. SEE THE CONTECH STANDARD CONDITIONS OF SALE (VIEWABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

A-2000 is manufactured under U.S. patent numbers 4,702,502; 4,846,660 and 5,124,109



4" THRU 10" DIAMETERS = 12'-6"
 12" THRU 36" DIAMETERS = 22'-0 OR 14'-0"

NOMINAL DIAMETERS (IN.)	AVERAGE O.D. (SPIGOT) (IN.)	AVERAGE O.D. (BELL) (IN.)	AVERAGE I.D. (IN.)	PIPE STIFFNESS (PSI)	MINIMUM FLATTENING (%)
4	4.3	4.9	3.9	46	40
6	6.4	6.9	5.9	46	40
8	8.6	9.3	7.9	46	40
10	10.8	11.7	9.8	46	40
12	12.8	13.9	11.7	46	40
15	15.7	16.9	14.3	46	40
18	19.2	20.6	17.6	46	40
21	22.6	24.6	20.7	46	40
24	25.6	27.9	23.5	46	40
30	32.2	35.1	29.5	46	40
36	38.7	42.3	35.5	46	40

not used
 not used
 not used
 not used

SCOPE

THIS SPECIFICATION INCLUDES MATERIALS, TEST METHODS AND INSTALLATION REQUIREMENTS FOR 4 TO 36-INCH DIAMETER POLYVINYL CHLORIDE (PVC) CORRUGATED 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 SANITARY SEWERS, STORM SEWERS, DRAINAGE AND UNDERDRAINS.

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 D2412. 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.

FITTINGS:

ALL FITTINGS FOR PVC CORRUGATED 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.

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.

CONTECH ID# 0000



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 WEST CHESTER, OHIO 45069
 PH: 1.800.338.1122 FAX: 513.645.7399

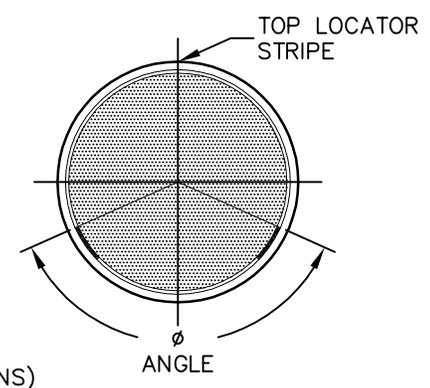
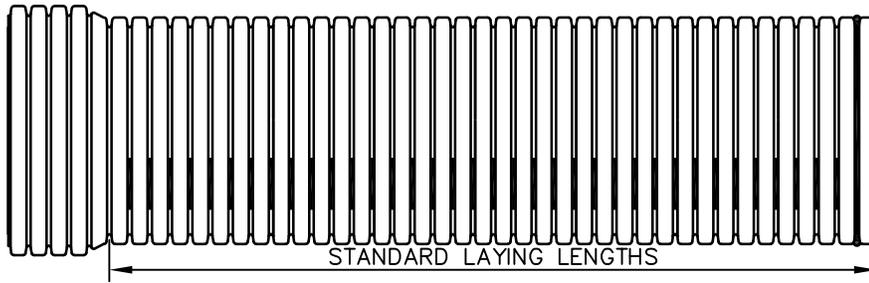
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A-2000 PVC DRAINAGE PIPE

PRODUCT SPECIFICATION
 FOR (F949) PVC PIPE
 (ENGLISH)

SCALE: N/A
 DRAWN BY: FAM
 DATE: 10/10/08
 REV. BY: ---
 DATE: ---
 SHEET: 1 of 1



4" THRU 10" DIAMETERS = 12'-6"
 12" THRU 18" DIAMETERS = 14'-0" (SLOTTED PERFORATIONS)
 15" THRU 36" DIAMETERS = 14'-0" AND 22'-0" (ROUND PERFORATIONS)

NOMINAL DIAMETERS (IN.)	AVERAGE O.D. (SPIGOT) (IN.)	AVERAGE I.D. (IN.)	SLOT LENGTH (IN.)	SLOT WIDTH (IN.)	SLOT CENTERS (IN.)	ANGLE (DEG.)	PIPE STIFFNESS (PSI)	STANDARD PERFORATION OPEN AREA PER FOOT (IN ²)	STANDARD ROUND HOLE OPEN AREA PER FOOT (IN ²)	FULLY PERFORATED OPEN AREA PER FOOT (IN ²)
4	4.3	3.9	1.062	0.031	0.413	152	46	1.92	not used	
6	6.4	5.9	1.375	0.031	0.516	134	46	1.99	not used	
8	8.6	7.9	1.800	0.031	0.689	132	46	1.90	not used	3.80
10	10.8	9.8	2.188	0.031	0.826	114	46	1.98	not used	3.96
12	12.8	11.7	1.688	0.051	1.033	122	46	2.00		4.00
15	15.7	14.3	2.250	0.051	1.377	124	46	2.00	1.71	4.00/3.42
18	19.2	17.6	2.250	0.051	1.377	120	46	2.00	1.71	4.00/3.42
21	22.6	20.7					46		2.70	5.40
24	25.6	23.5					46		2.70	5.40
30	32.2	29.5					46		2.20	4.40
36	38.7	35.5					46		2.00	4.00

SCOPE:

THIS SPECIFICATION INCLUDES MATERIALS, TEST METHODS AND INSTALLATION REQUIREMENTS FOR 4 TO 36-INCH DIAMETER POLYVINYL CHLORIDE (PVC) CORRUGATED 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 SANITARY SEWERS, STORM SEWERS, DRAINAGE AND UNDERDRAINS.

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 D2412. 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.

FITTINGS:

ALL FITTINGS FOR PVC CORRUGATED 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.

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.

PERFORATIONS:

FOR SLOTTED, STANDARD PERFORATED PIPE, THE PERFORATION DIMENSIONS SHALL BE IN ACCORDANCE WITH ASTM F949 TABLE 5 AND SECTION 7.9. INSTEAD OF SLOTS, ROUND HOLES (MIN. 1/4"∅) MAY BE USED FOR 15"-18" DIAMETER PIPE AND (MIN. 3/8"∅) FOR 21"-36" DIAMETER PIPE.

CONTECH ID# 0000



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A-2000 PERFORATED PIPE
 PRODUCT SPECIFICATION
 FOR (F949) PVC PIPE
 (ENGLISH)

SCALE: N/A
 DRAWN BY: FAM
 DATE: 10/10/08
 REV. BY: —
 DATE: —
 SHEET: 1 of 1

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A-2000[™] PVC Pipe Fittings and Components



General Notes

1. * Indicates a fabricated part.
2. ** Indicates a molded part with bushing or adaptor.
3. All drawings herein are for illustrative purposes only and are not intended as true representations of actual parts.
4. This catalog contains the most commonly used A-2000™ fittings and components. Additional A-2000 parts not shown may be available from Contech Engineered Solutions LLC. Contact your local Contech Plastic Pipe Specialist about items not listed.
5. All saddles include templates and stainless steel bands. Adhesives or gaskets are not included and must be ordered separately.

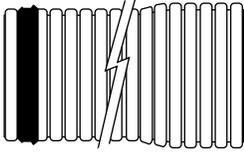
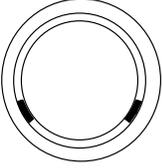
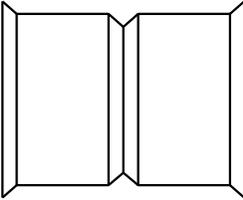
Joining A-2000 gasketed PVC pipe and fittings

(ASTM D3212)

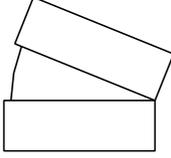
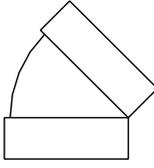
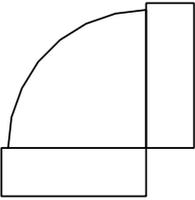
Lubrication Requirements (Joints per Gallon)	
Pipe Size (inches)	Lubricant
4	300
6	220
8	100
10	64
12	48
15	25
18	20
21	16
24	11
30	7
36	5



A-2000 Pipe

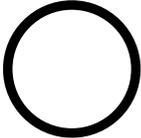
Type	Available Sizes (inches)	Part Number	
 <p>Pipe</p>	4	A2PG041250	
	6	A2PG061250	
	8	A2PG081250	
	10	A2PG101250	
	12	A2PG121250	
	15	A2PG151250	
	18	A2PG181250	
	21	A2PG211300	
	24	A2PG241300	
	30	A2PG301300	
	36	A2PG361300	
	 <p>Perforated Pipe</p> <p>Same as above. 4" thru 18" pipe is slotted. 21" through 36" pipe has 3/8" holes.</p>	4	A2PG041250P
		6	A2PG061250P
8		A2PG081250P	
10		A2PG101250P	
12		A2PG121250P	
15		A2PG151250P	
18		A2PG181250P	
21		A2PG211250P	
24		A2PG241300P	
30		A2PG301300P	
36	A2PG361300P		
 <p>1/4 Bend (Bell-Bell)</p>	4	APG04CCS	
	6	APG06CCS	
	8	APG08CCS	
	10	APG10CCS	
	12	APG12CCS*	
	15	APG15CCS*	
	18	APG18CCS*	
	21	APG21CCS*	
	24	APG24CCS*	
	30	APG30CCS*	
36	APG36CCS*		
 <p>Loose Coupling without Centerstop</p>	4	APG04C	
	6	APG06C	
	8	APG08C	
	10	APG10C	
	12	APG12C*	
	15	APG15C*	
	18	APG18C*	
	21	APG21C*	
	24	APG24C*	
	30	APG30C*	
36	APG36C*		
 <p>Spigot Cap</p>	4	APG04SC	
	6	APG06SC	
	8	APG08SC	
	10	APG10SC	
	12	APG12SC*	
	15	APG15SC*	
	18	APG18SC*	
	21	APG21SC*	
	24	APG24SC*	
	30	APG30SC*	
36	APG36SC*		

Elbows

Type	Available Sizes (inches)	Part Number
 <p>1/16 Bend (Bell-Bell)</p>	4	APG04L22B
	6	APG06L22B
	8	APG08L22B*
	10	APG10L22B*
	12	APG12L22B*
	15	APG15L22B*
	18	APG18L22B*
	21	APG21L22B*
	24	APG24L22B*
	30	APG30L22B*
36	APG36L22B*	
 <p>1/8 Bend (Bell-Bell)</p>	4	APG04L45B
	6	APG06L45B
	8	APG08L45B
	10	APG10L45B*
	12	APG12L45B*
	15	APG15L45B*
	18	APG18L45B*
	21	APG21L45B*
	24	APG24L45B*
	30	APG30L45B*
36	APG36L45B*	
 <p>1/4 Bend (Bell-Bell)</p>	4	APG04L90B
	6	APG06L90B
	8	APG08L90B
	10	APG10L90B*
	12	APG12L90B*
	15	APG15L90B*
	18	APG18L90B*
	21	APG21L90B*
	24	APG24L90B*
	30	APG30L90B*
36	APG36L90B*	

Gaskets and Manhole Connectors

Type	Available Sizes (inches)	Part Number
	4	APG04G
	6	APG06G
	8	APG08G
	10	APG10G
	12	APG12G
	15	APG15G
	18	APG18G
	21	APG21G
	24	APG24G
	30	APG30G
36	APG36G	

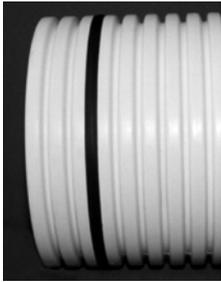
	4 PERF	APG04GO
	6 PERF	APG06GO

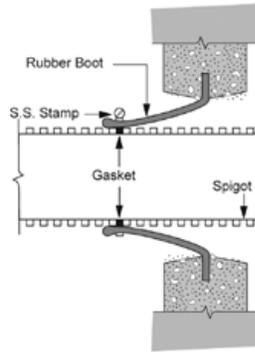
For 4" and 6" perforated pipe

	8 PERF	APG08GO
	10 PERF	APG10GO
	12 PERF	APG12GO
	15 PERF	APG15GO
	18 PERF	APG18GO
	21 PERF	APG21GO

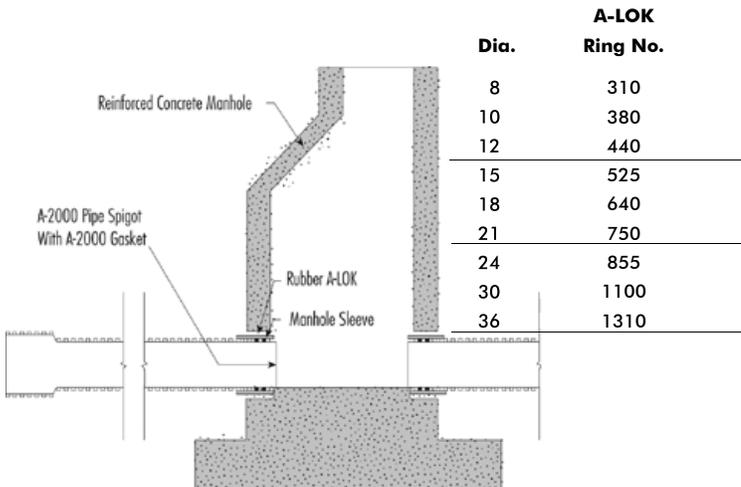
For 8" thru 36" perforated and drainage pipe

	8	APG08MHC
	10	APG10MHC
	12	APG12MHC
	15	APG15MHC
	18	APG18MHC
	21	APG21MHC
	24	APG24MHC
	30	APG30MHC
	36	APG36MHC

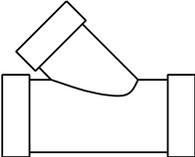
Type	Available Sizes (inches)		Part Number
	Diameter (inches)	Average Outside Diameter (inches)	
	4	4.30	APG04G
	6	6.42	APG06G
	8	8.60	APG08G
	10	10.79	APG10G
	12	12.80	PFAPG 12 GM
	15	15.66	PFAPG 15 GM
	18	19.15	PFAPG 18 GM
	21	22.59	PFAPG 21 GM
	24	25.58	PFAPG 24 GM
	30	32.15	PFAPG 30 GM
	36	38.74	PFAPG 36 GM

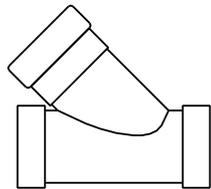
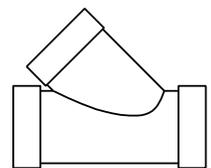


*For 21" diameter and larger pipe, the boot manufacturers recommend using two stainless steel clamp assemblies (with two screws per assembly) per boot. Clamps should be positioned evenly around the boot groove with the screws staggered so that the take-up pressure is equalized. Tighten screws of the outside clamp in an alternating pattern to the recommended torque on final screw. Check all screws again to ensure equal compression of both clamps.



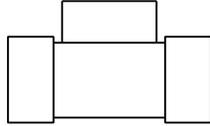
Wyes

Type	Available Sizes (inches)	Part Number
Reducing Inline Wye with A-2000 Branch	6x6x4	APG06YB4B
	8x8x4	APG08YB4B
	8x8x6	APG08YB6B*
	10x10x4	APG10YB4B*
	10x10x6	APG10YB6B*
	10x10x8	APG10YB8B*
	12x12x4	APG12YB4B*
	12x12x6	APG12YB6B*
	12x12x8	APG12YB8B*
	12x12x10	APG12YB10B*
	15x15x4	APG15YB4B*
	15x15x6	APG15YB6B*
	15x15x8	APG15YB8B*
	15x15x10	APG15YB10B*
	15x15x12	APG15YB12B*
	18x18x4	APG18YB4B*
	18x18x6	APG18YB6B*
	18x18x8	APG18YB8B*
	18x18x10	APG18YB10B*
	18x18x12	APG18YB12B*
	18x18x15	APG18YB15B*
	21x21x4	APG21YB4B*
	21x21x6	APG21YB4B*
	21x21x8	APG21YB8B*
	21x21x10	APG21YB10B*
	21x21x12	APG21YB10B*
	21x21x15	APG21YB15B*
	21x21x18	APG21YB18B*
	24x24x4	APG24YB4B*
	24x24x6	APG24YB6B*
	24x24x8	APG24YB8B*
	24x24x10	APG24YB10B*
	24x24x12	APG24YB12B*
24x24x15	APG24YB15B*	
24x24x18	APG24YB18B*	
24x24x21	APG24YB21B*	
30x30x4	APG30YB4B*	
30x30x6	APG30YB6B*	
30x30x8	APG30YB8B*	
30x30x10	APG30YB10B*	
30x30x12	APG30YB12B*	
30x30x15	APG30YB15B*	
30x30x18	APG30YB18B*	
30x30x21	APG30YB21B*	
30x30x24	APG30YB24B*	
36x36x4	APG36YB4B*	
36x36x6	APG36YB6B*	
36x36x8	APG36YB8B*	
36x36x10	APG36YB10B*	
36x36x12	APG36YB12B*	
36x36x15	APG36YB15B*	
36x36x18	APG36YB18B*	
36x36x21	APG36YB21B*	
36x36x24	APG36YB24B*	
36x36x30	APG36YB30B*	

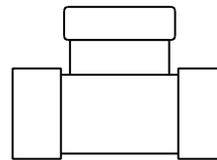
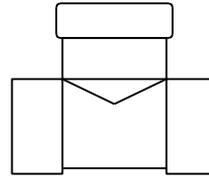
Type	Available Sizes (inches)	Part Number
Non-Reducing Inline Wye with SDR35 Branch	4x4x4	APG04YB435 **
	6x6x6	APG06YB635 **
	6x6x4	APG06YB435 **
	8x8x4	APG08YB435 _
	8x8x6	APG08YB635 _
Reducing Inline Wye with SDR35 Branch	10x10x4	APG10YB435 *
	10x10x6	APG10YB635 *
	12x12x4	APG12YB435 *
	12x12x6	APG12YB635 *
	15x15x4	APG15YB435 *
	15x15x6	APG15YB635 *
	18x18x4	APG18YB435 *
	18x18x6	APG18YB635 *
	21x21x4	APG21YB435 *
	21x21x6	APG21YB635 *
	24x24x4	APG24YB435 *
	24x24x6	APG24YB635 *
	30x30x4	APG30YB435 *
	30x30x6	APG30YB635 *
	36x36x4	APG36YB435 *
36x36x6	APG36YB635 *	
Non-Reducing Inline Wye with A-2000 Branch	4x4x4	APG04TB4B
	6x6x6	APG06TB6B
	8x8x8	APG08TB8B
	10x10x10	APG10TB10B*
	12x12x12	APG12TB12B*
	15x15x15	APG15TB15B*
	18x18x18	APG18TB18B*
	21x21x21	APG21TB21B*
	24x24x24	APG24TB24B*
	30x30x30	APG30TB30B*
	36x36x36	APG36TB36B*
		

Tees

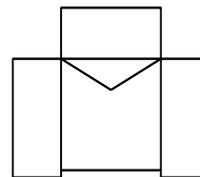
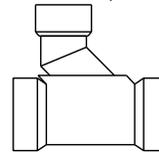
Type	Available Sizes (inches)	Part Number
Reducing Inline Tee with A-2000 Branch	6x6x4	APG06TB4B**
	8x8x4	APG08TB4B
	8x8x6	APG08TB6B
	10x10x4	APG10TB4B*
	10x10x6	APG10TB6B*
	10x10x8	APG10TB8B*
	12x12x4	APG12TB4B*
	12x12x6	APG12TB6B*
	12x12x8	APG12TB8B*
	12x12x10	APG12TB10B*
	15x15x4	APG15TB4B*
	15x15x6	APG15TB6B*
	15x15x8	APG15TB8B*
	15x15x10	APG15TB10B*
	15x15x12	APG15TB12B*
	18x18x4	APG18TB4B*
	18x18x6	APG18TB6B*
	18x18x8	APG18TB8B*
	18x18x10	APG18TB10B*
	18x18x12	APG18TB12B*
	18x18x15	APG18TB15B*
	21x21x4	APG24TB4B*
	21x21x6	APG24TB6B*
	21x21x8	APG24TB8B*
	21x21x10	APG24TB10B*
	21x21x12	APG24TB12B*
	21x21x15	APG24TB15B*
	21x21x18	APG24TB18B*
	24x24x4	APG24TB4B*
	24x24x6	APG24TB6B*
	24x24x8	APG24TB8B*
	24x24x10	APG24TB10B*
	24x24x12	APG24TB12B*
	24x24x15	APG24TB15B*
	24x24x18	APG24TB18B*
	24x24x21	APG24TB21B*
	30x30x4	APG30TB4B*
	30x30x8	APG30TB6B*
	30x30x8	APG30TB8B*
	30x30x10	APG30TB10B*
	30x30x12	APG30TB12B*
	30x30x15	APG30TB15B*
	30x30x18	APG30YB18B*
	30x30x21	APG30YB21B*
	30x30x24	APG30YB24B*
	36x36x4	APG36TB4B*
	36x36x6	APG36TB6B*
	36x36x8	APG36TB8B*
	36x36x10	APG36TB10B*
	36x36x12	APG36TB12B*
	36x36x15	APG36TB15B*
	36x36x18	APG36YB18B*
	36x36x21	APG36YB21B*
	36x36x24	APG36YB24B*
	36x36x30	APG36YB30B*



Type	Available Sizes (inches)	Part Number
Non-Reducing Inline Tee with SDR35 Branch	4x4x4	APG04TB435**
	6x6x6	APG06TB635**
	6x6x4	APG06TB435_**
	8x8x4	APB08TB435_
	8x8x6	APG08TB635_
	10x10x4	APG10TB435_*
	10x10x6	APG10TB635_*
	12x12x4	APG12TB435_*
	12x12x6	APG12TB635_*
	15x15x4	APG15TB435_*
	15x15x6	APG15TB635_*
	18x18x4	APG18TB435_*
	18x18x6	APG18TB635_*
	21x21x4	APG21TB435_*
	21x21x6	APG21TB635_*
	24x24x4	APG24TB435_*
	24x24x6	APG24TB635_*
	30x30x4	APG30TB435_*
	30x30x6	APG30TB635_**
	36x36x4	APG36TB435_*
	36x36x6	APG30TB635_*
	8x8x4	APG08TY4*
	8x8x6	APG08TY6*
	10x10x4	APG10TY4*
	10x10x6	APG10TY6*
	12x12x4	APG12TY4*
	12x12x6	APG12TY6*
	Non-Reducing Inline Tee with A-2000 Branch	4x4x4
6x6x6		APG06TB6B
	8x8x8	APG08TB8B
	10x10x10	APG10TB10B*
	12x12x12	APG12TB12B*
	15x15x15	APG15TB15B*
	18x18x18	APG18TB18B*
	21x21x21	APG21TB21B*
	24x24x24	APG24TB24B*
	30x30x30	APG30TB30B*
	36x36x36	APG36TB36B*

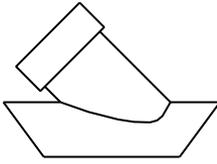


Tee Wye



Saddle Wyes

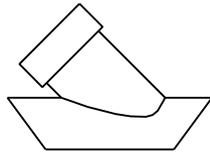
Type	Available Sizes (inches)	Part Number
Smooth Wye SDR35 Branch	6x4	APX06Y435B__**
	8x4	APX08Y435B__**
	8x6	APX08Y635B__**
	10x4	APX10Y435B__**
	10x6	APX10Y635B__**
	12x4	APX12Y435B__**
	12x6	APX12Y635B__**
	15x4	APX15Y435B__**
	15x6	APX15Y635B__**
	18x4	APX18Y435B__**
	18x6	APX18Y635B__**



Note:
 1. __ must be filled in to indicate type of branch joint.
 G = Gasketed
 S = Solvent Weld

- Notes:
- Saddles are available in 6" thru 18" diameters.
 - Saddles include templates and stainless steel bands. Adhesive or gaskets are not included and must be ordered separately.

Saddle Wye
A-2000 Branch

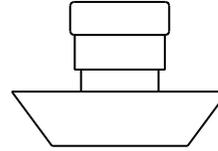


6x4	APX06Y4**
8x4	APX08Y4**
8x6	APX08Y6
10x4	APX10Y4**
10x6	APX10Y6
12x4	APX12Y4**
12x6	APX12Y6**
15x4	APX15Y4**
15x6	APX15Y6**
18x4	APX18Y4**
18x6	APX18Y6**

- Notes:
- Saddles are available in 6" thru 36" diameters.
 - All saddles include templates and stainless steel bands. Adhesive or gaskets are not included and must be ordered separately.

Saddle Tees

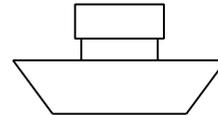
Type	Available Sizes (inches)	Part Number
Saddle Tee SDR35 Branch	6x4	APX06T435B__
	8x4	APX08T435B__**
	8x6	APX08T635B__**
	10x4	APX10T435B__**
	10x6	APX10T635B__**
	12x4	APX12T435B__**
	12x6	APX12T635B__**
	15x4	APX15T435B__**
	15x6	APX15T635B__**
	18x4	APX18T435B__**
	18x6	APX18T635B__**
	21x4	APX21S435B__**
	21x6	APX21T635B__**
	24x4	APX24T435B__**
	24x6	APX24S635B__**
	30x4	APX30T435B__**
	30x6	APX30T635B__**
	36x4	APX36T435B__**
	36x6	APX36T635B__**



- Notes:
- Saddles are available in 6" thru 36" diameters.
 - Saddles include templates and stainless steel bands. Adhesive or gaskets are not included and must be ordered separately.

Note:
 1. __ must be filled in to indicate type of branch joint.
 G = Gasketed
 S = Solvent Weld

Saddle Tee
A-2000 Branch



6x4	APX06T4B**
8x4	APX08T4B**
8x6	APX08T6B
10x4	APX10T4B**
10x6	APX10T6B
12x4	APX12T4B**
12x6	APX12T6B**
15x4	APX15T4B**
15x6	APX15T6B**
15x8	APX15T8B*
18x4	APX18T4B**
18x6	APX18T6B**
21x4	APX21T4B**
21x6	APX21T6B**
24x4	APX24T4B**
24x6	APX24T6B**
30x4	APX30T4B**
30x6	APX30T6B**
36x4	APX36T4B**
36x6	APX36T6B**

- Notes:
- Saddles are available in 6" thru 36" diameters.
 - All saddles include templates and stainless steel bands. Adhesive or gaskets are not included and must be ordered separately.

Saddle Adhesive Caulking

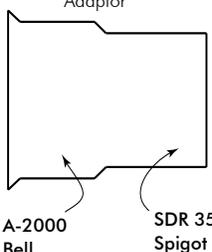


CPSC

Tubes (SIKAFLEX 221)
 (RAPIDSEAL 365)

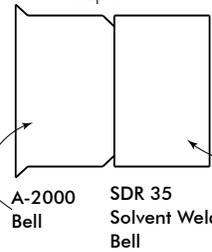
Adaptors

Type	Available Sizes (inches)	Part Number
A-2000 Bell/SDR35 Spigot Adaptor	4	APG0435S*
	6	APG0635S*
	8	APG0835S*
	10	APG1035S*
	12	APG1235S*
	15	APG1535S*
	18	APG1835S*
	21	APG2135S*
	24	APG2435S*
	30	APG3035S*
	36	APG3635S*



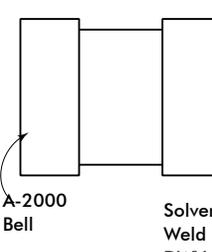
A-2000 Bell SDR 35 Spigot

A-2000 Bell/SDR35 Bell Adaptor	4	APB0435BS*
	6	APB0635BS*



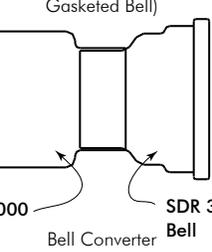
A-2000 Bell SDR 35 Solvent Weld Bell

A-2000 Bell/DWV Bell Adaptor	4	APG04DWV*
	6	APG06DWV*



A-2000 Bell Solvent Weld DWV Bell

A-2000 Bell Adaptor (to SDR35 Gasketed Bell)	4	APG04AD35BG*
	6	APG06AD35BG*

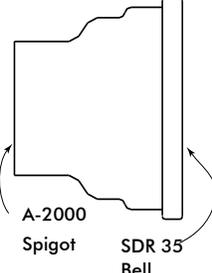


A-2000 Bell SDR 35 Bell

Bell Converter

(Converts A-2000 Bell to SDR35 Gasketed Bell)

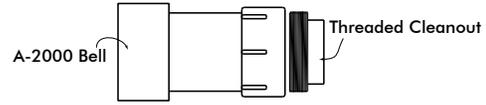
A-2000 Spigot Adaptor (to SDR35 Bell)	4	APS04BC35BG*
	6	APS06BC35BG*



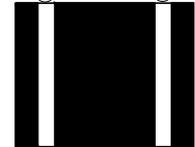
A-2000 Spigot SDR 35 Bell

Coupling/Caps

Type	Available Sizes (inches)	Part Number
Cleanout and Cap	4	APG04CLN**
	6	APG06CLN**



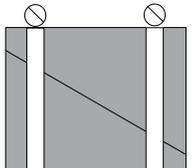
Repair Coupling (Fernco Type 1056)	4	004FCA
	6	006FCA
	8	008FCA
	10	010FCA
	12	012FCA
	15	015FCA
	18	018FCA
	21	021FCA
	24	024FCA
	30	030FCA
	36	036FCA



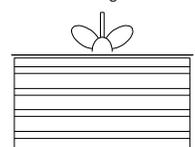
Stainless Steel Straps

Note: 12" and larger Fernco couplings are not inventoried and are available on special order.

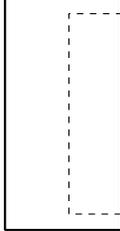
Shear Stop for Repair Coupling	4	004CRP*
	6	006CRP*
	8	008CRP*
	10	010CRP*
	12	012CRP*
	15	015CRP*
	18	P18CRP*

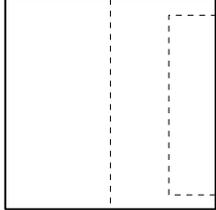


Mechanical Plug	4	04MP
	6	06MP



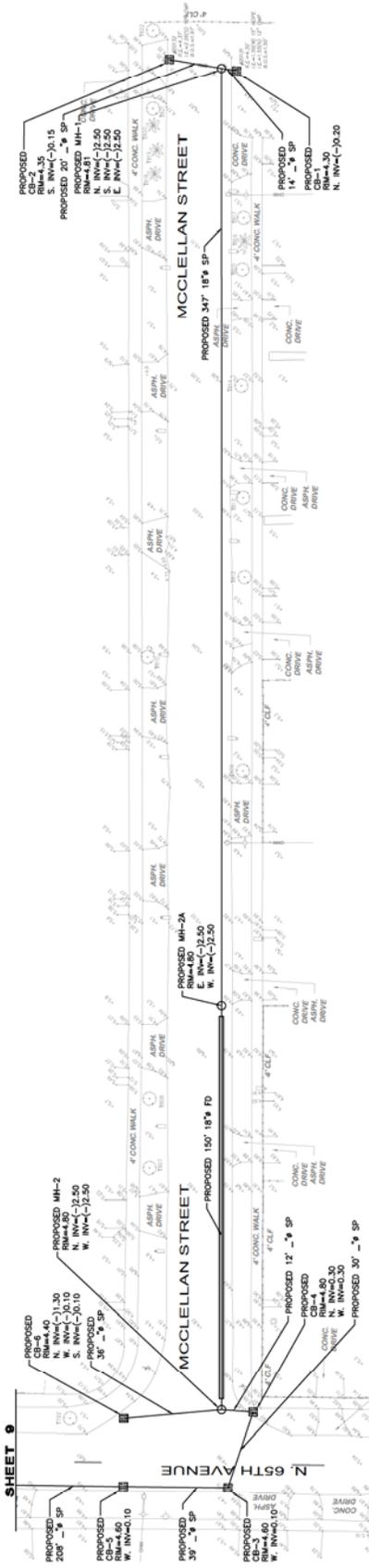
Bushings

Type	Available Sizes (inches)	Part Number
Bushing (Spigot x Bell) 	6 x 4	APG06BU4
	8 x 4	APG08BU4**
	8 x 6	APG08BU6
	10 x 4	APG10BU4*
	10 x 6	APG10BU6*
	10 x 8	APG10BU8*
	12 x 4	APG12BU4*
	12 x 6	APG12BU6*
	12 x 8	APG12BU8*
	12 x 10	APG12BU10*
	15 x 4	APG15BU4*
	15 x 6	APG15BU6*
	15 x 8	APG15BU8*
	15 x 10	APG15BU10*
	15 x 12	APG15BU12*
	18 x 4	APG18BU4*
	18 x 6	APG18BU6*
	18 x 8	APG18BU8*
	18 x 10	APG18BU10*
	18 x 12	APG18BU12*
	18 x 15	APG18BU15*
	21 x 4	APG21BU4*
	21 x 6	APG21BU6*
	21 x 8	APG21BU8*
	21 x 10	APG21BU10*
	21 x 12	APG21BU12*
	21 x 15	APG21BU15*
	21 x 18	APG21BU18*
	24 x 4	APG24BU4*
	24 x 6	APG24BU6*
	24 x 8	APG24BU8*
	24 x 10	APG24BU10*
	24 x 12	APG24BU12*
	24 x 15	APG24BU15*
	24 x 18	APG24BU18*
	24 x 21	APG24BU21*
30 x 4	APG30BU4*	
30 x 6	APG30BU6*	
30 x 8	APG30BU8*	
30 x 10	APG30BU10*	
30 x 12	APG30BU12*	
30 x 15	APG30BU15*	
30 x 18	APG30BU18*	
30 x 21	APG24BU21*	
30 X 24	APG30BU24*	
36 x 4	APG36BU4*	
36 x 6	APG36BU6*	
36 x 8	APG36BU8*	
36 x 10	APG36BU10*	
36 x 12	APG36BU12*	
36 x 15	APG36BU15*	
36 x 18	APG36BU18*	
36 x 21	APG36BU21*	
36 x 24	APG36BU24*	
36 x 30	APG36BU30*	

Type	Available Sizes (inches)	Part Number
Bushed Reducer (Bell/Bell) 	6 x 4	APG06BR4**
	8 x 4	APG08BR4**
	8 x 6	APG08BR6**
	10 x 4	APG10BR4*
	10 x 6	APG10BR6*
	10 x 8	APG10BR8*
	12 x 4	APG12BR4*
	12 x 6	APG12BR6*
	12 x 8	APG12BR8*
	12 x 10	APG12BR10*
	15 x 4	APG15BR4*
	15 x 6	APG15BR6*
	15 x 8	APG15BR8*
	15 x 10	APG15BR10*
	15 x 12	APG15BR12*
	18 x 4	APG18BR4*
	18 x 6	APG18BR6*
	18 x 8	APG18BR8*
	18 x 10	APG18BR10*
	18 x 12	APG18BR12*
	18 x 15	APG18BR15*
	21 x 4	APG21BR4*
	21 x 6	APG21BR6*
	21 x 8	APG21BR8*
	21 x 10	APG21BR10*
	21 x 12	APG21BR12*
	21 x 15	APG21BR15*
	21 x 18	APG21BR18*
	24 x 4	APG24BR4*
	24 x 6	APG24BR6*
	24 x 8	APG24BR8*
	24 x 10	APG24BR10*
	24 x 12	APG24BR12*
	24 x 15	APG24BR15*
	24 x 18	APG24BR18*
	24 x 21	APG24BR21*
30 x 4	APG30BR4*	
30 x 6	APG30BR6*	
30 x 8	APG30BR8*	
30 x 10	APG30BR10*	
30 x 12	APG30BR12*	
30 x 15	APG30BR15*	
30 x 18	APG30BR18*	
30 x 21	APG30BR21*	
30 x 24	APG30BR24*	
36 x 4	APG36BR4*	
36 x 6	APG36BR6*	
36 x 8	APG36BR8*	
36 x 10	APG36BR10*	
36 x 12	APG36BR12*	
36 x 15	APG36BR15*	
36 x 18	APG36BR18*	
36 x 21	APG36BR21*	
36 x 24	APG36BR24*	
36 x 30	APG36BR30*	

21-11047- Drainage Improvements

**PLANS AND DETAILS
(N 65th Ave from McClellan St to Cluster St)**



N. 65TH AVENUE

SHEET 8 OF

**DRAINAGE IMPROVEMENTS
PROPOSED PLAN**

DESIGNED BY: J. W. HENDERSON
CHECKED BY: J. W. HENDERSON
DATE: 09/29/2020
FLORIDA P.E. No. 547756

DESIGNED BY: J. W. HENDERSON
CHECKED BY: J. W. HENDERSON
DATE: 09/29/2020

DEPARTMENT OF PUBLIC UTILITIES
ENGINEERING AND CONSTRUCTION SERVICES
CITY OF HOLLYWOOD FLORIDA

NO.	DATE	DESCRIPTION	BY	CHKD.

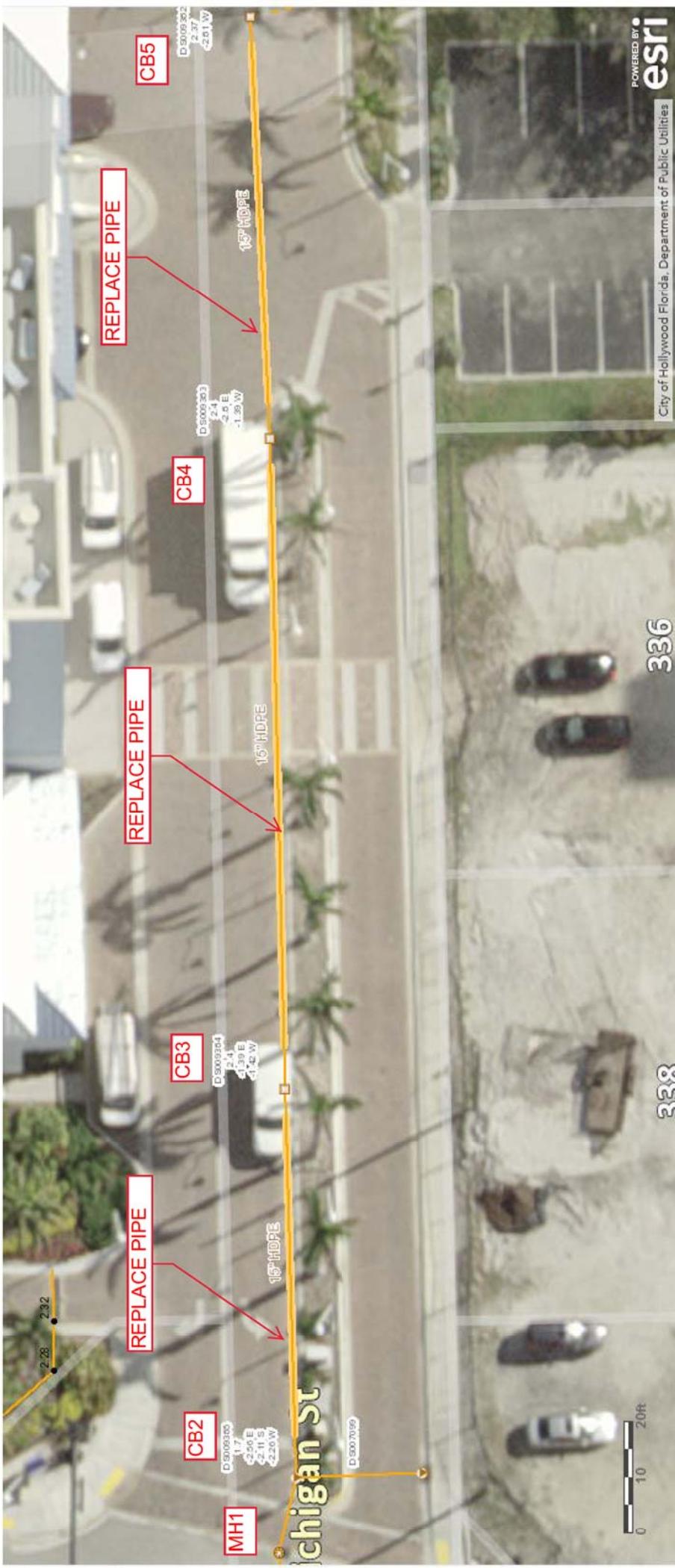
21-11047- Drainage Improvements

Drainage Pipe, Drainage Structure and Drainage Structure Plug Replacement

CCTV REPORT

A1A Streets

- **Michigan St**
- **Johnson St**
- **Harrison St**



CB5

REPLACE PIPE

CB4

REPLACE PIPE

CB3

REPLACE PIPE

CB2

MH1

D 50009302
2.37
-2.81 W

D 50009303
2.4
-2.6 E
-1.36 W

D 50009304
2.4
-4.39 E
-1.42 W

D 50009300
1.7
-2.96 E
-2.11 S
-2.20 W

D 50009309

16" HDPE

16" HDPE

16" HDPE

2.28 2.32

Michigan St

0 10 20ft

336

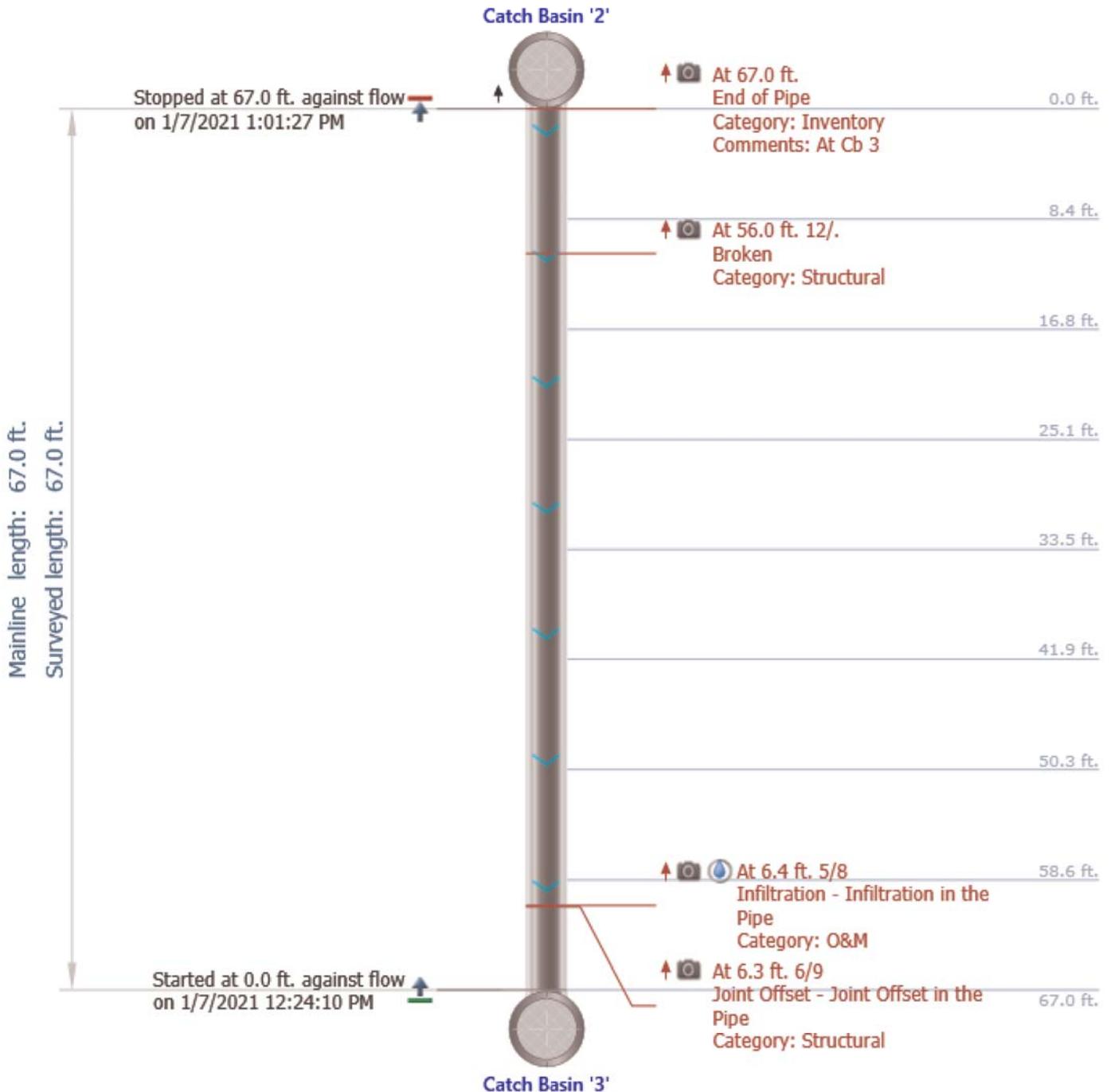
338

POWERED BY
esri

City of Hollywood Florida, Department of Public Utilities

Main Inspections Pipe Run

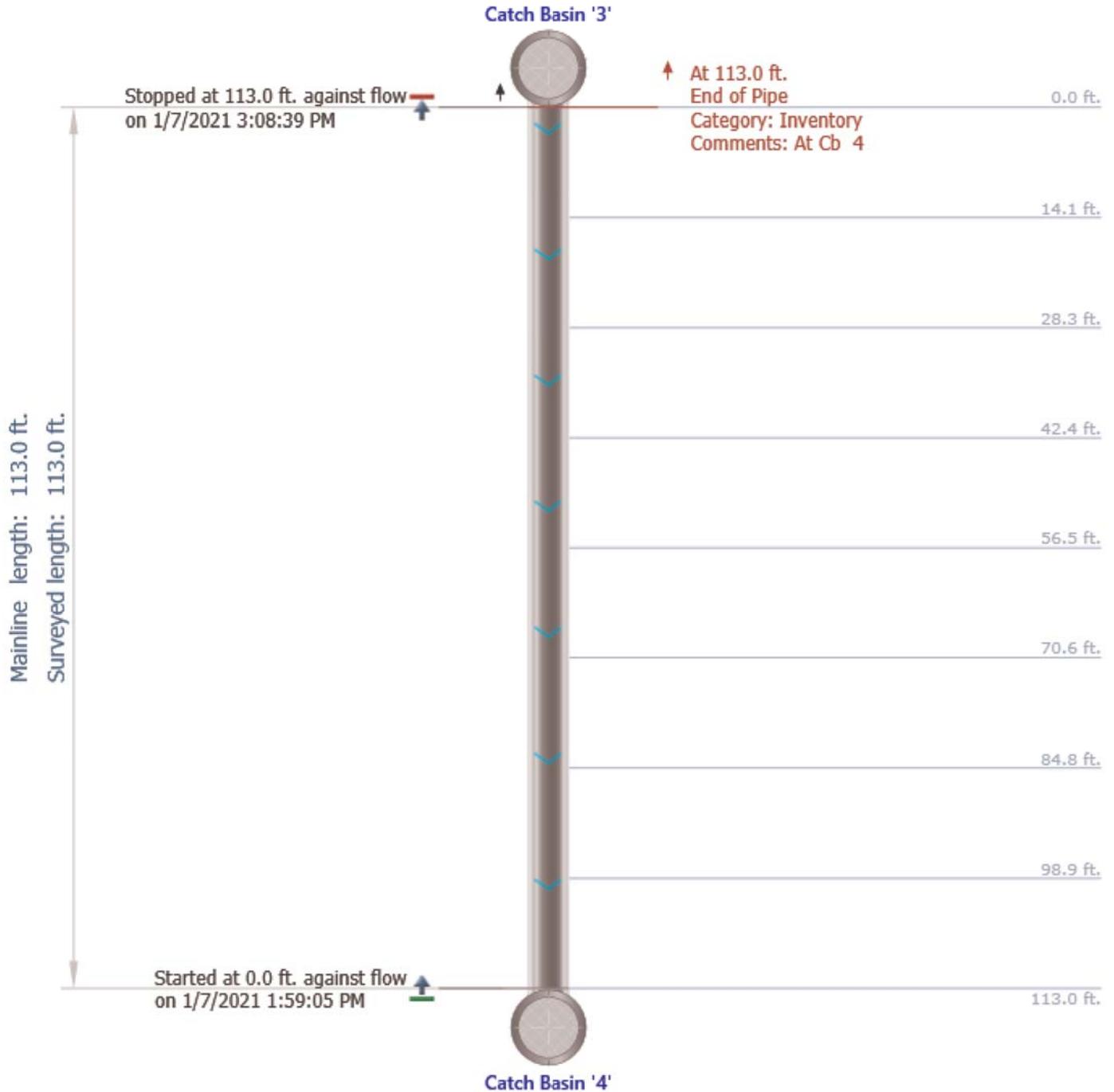
Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 2_3	City: Hollywood	Address: 1111 Michigan St
Start date/time: 1/7/2021 12:24 PM	Direction: Against the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: PVC	Pipe height: 15.0 in.	Pipe width:



- 1). 1111 Michigan St. - pipe looks like it dropped off at a joint and also has perforated pipe, catch basin 2 and 3, 3 and 4
- 2). 1111 Michigan St. - catch basin 5-4 perforated Corrugated pipe.

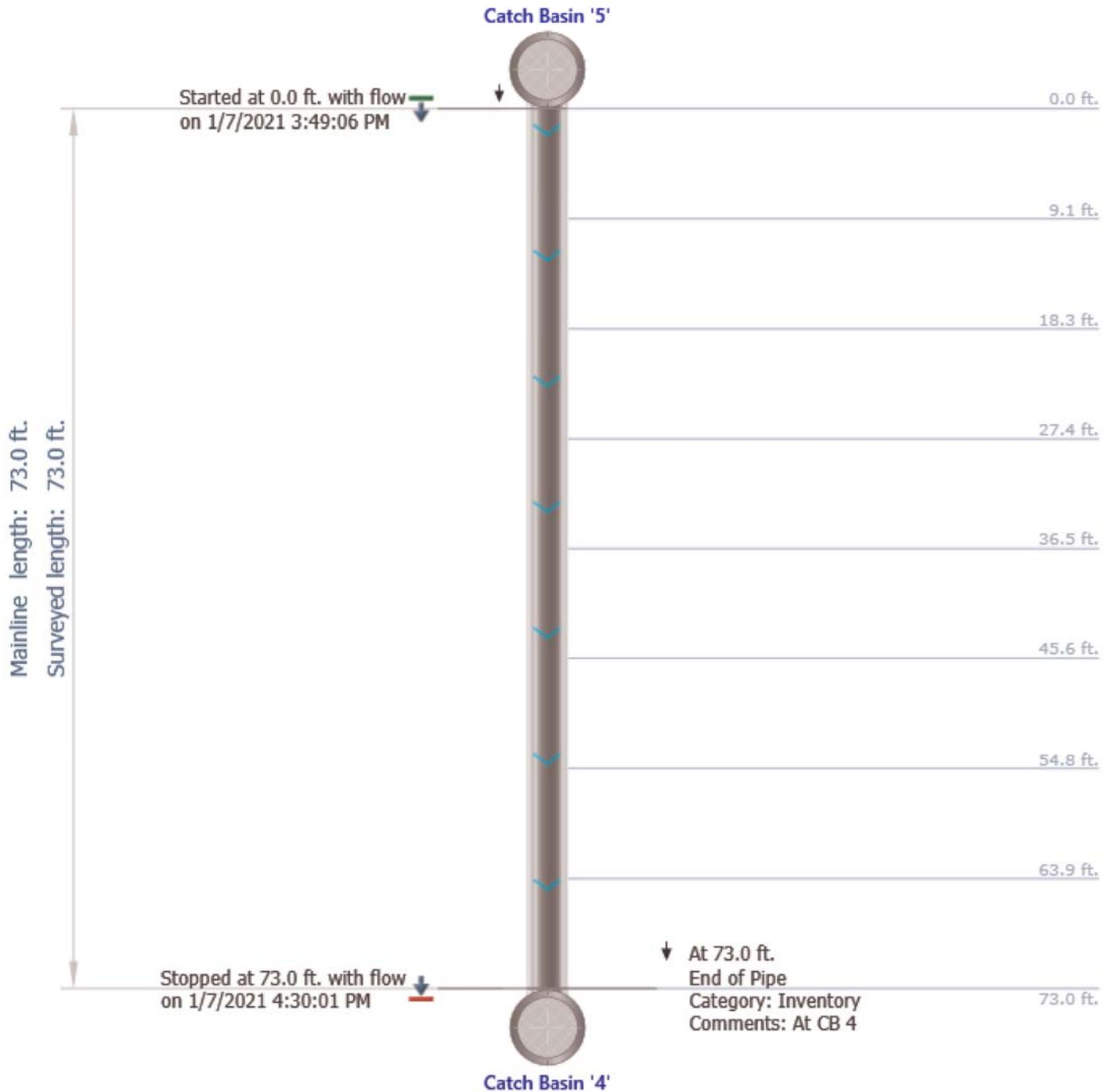
Main Inspections Pipe Run

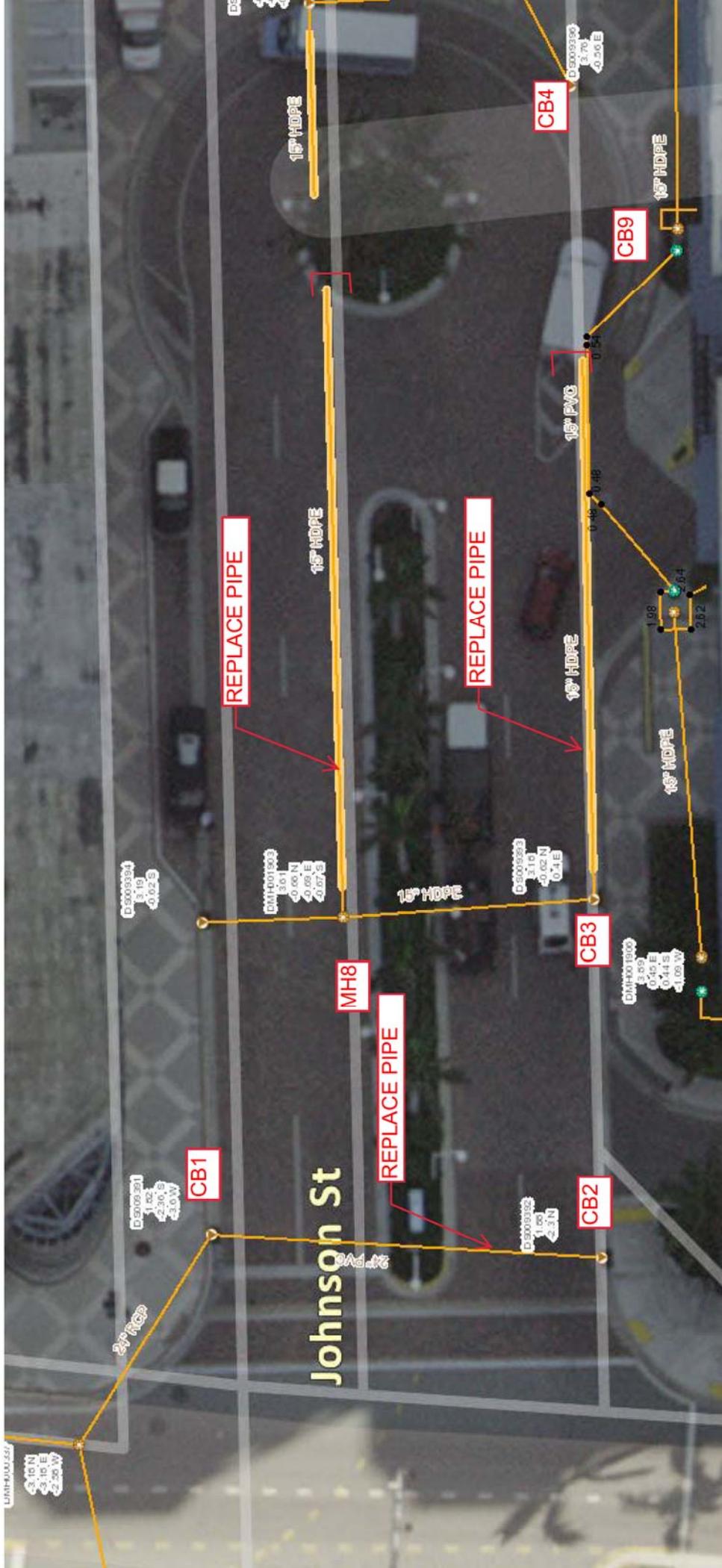
Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 3_4	City: Hollywood	Address: 1111 Michigan St
Start date/time: 1/7/2021 1:59 PM	Direction: Against the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: PVC	Pipe height: 15.0 in.	Pipe width:



Main Inspections Pipe Run

Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 5-4	City: Hollywood	Address: 1111 Michigan St
Start date/time: 1/7/2021 3:49 PM	Direction: With the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: PVC	Pipe height: 15.0 in.	Pipe width:

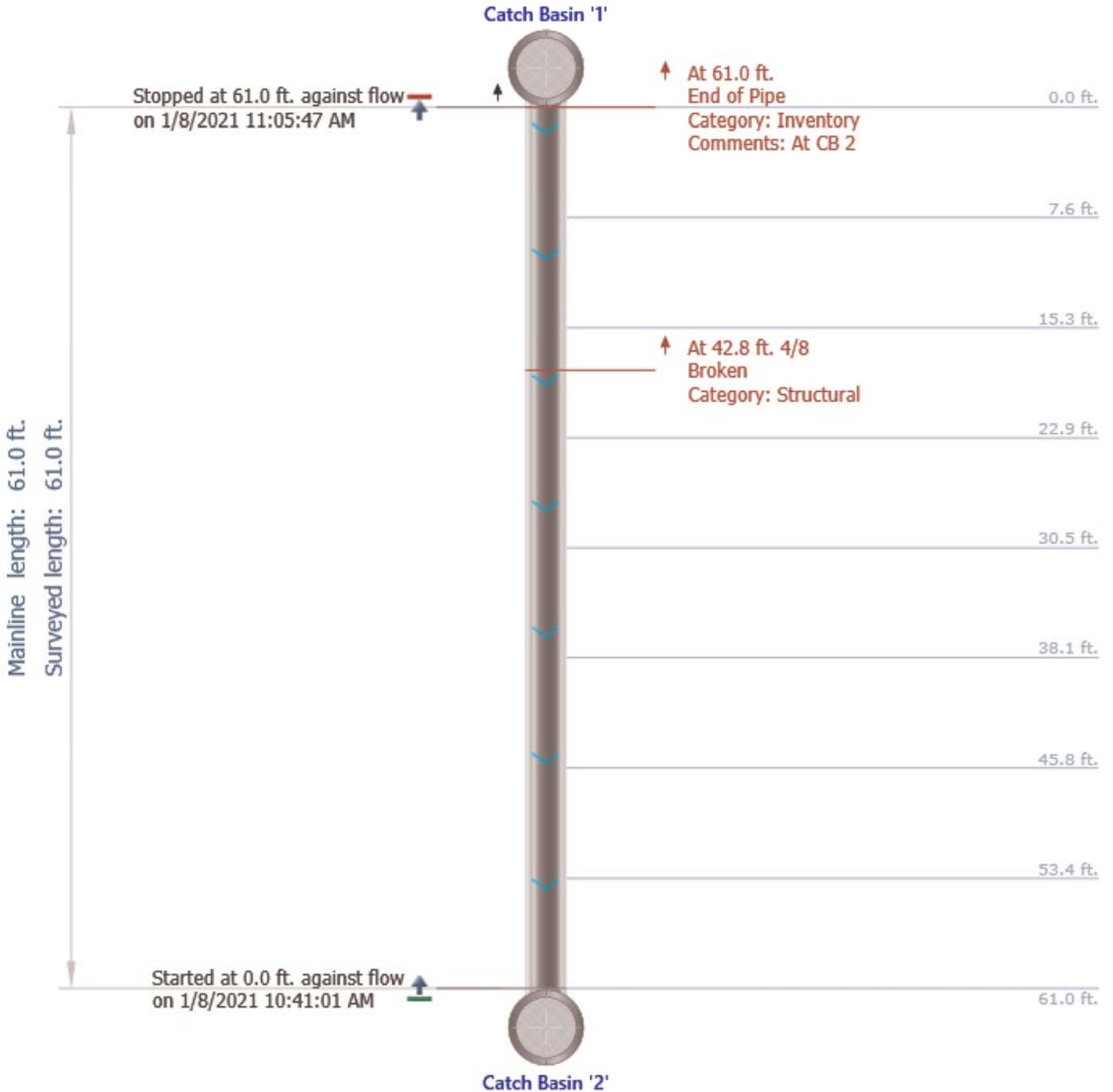






Main Inspections Pipe Run

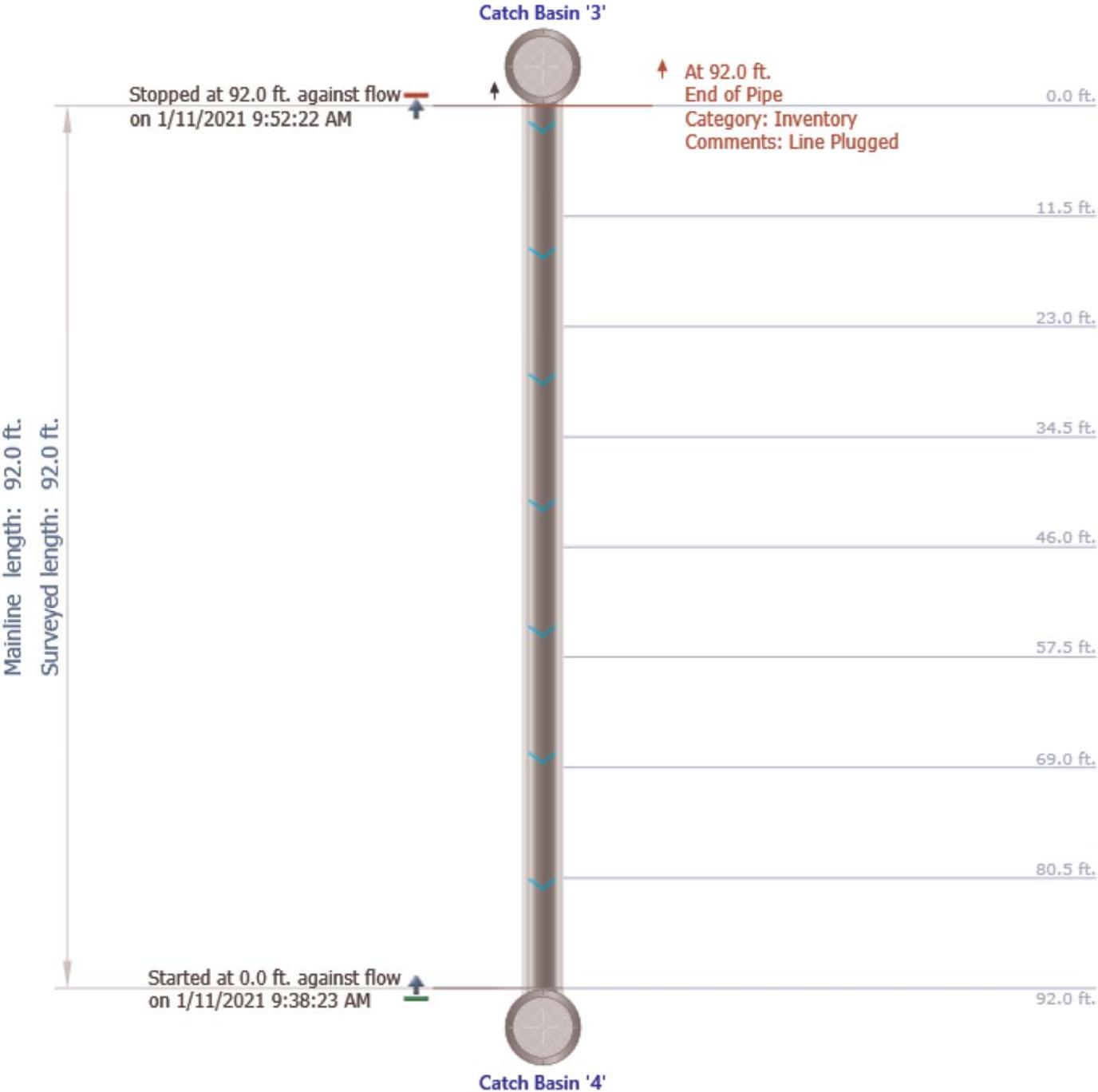
Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 1_2	City: Hollywood	Address: Ocean Dr & Johnson St
Start date/time: 1/8/2021 10:41 AM	Direction: Against the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: PVC	Pipe height: 24.0 in.	Pipe width:



- 1). Johnson St and A1A - Pipe cracked, missing small section
- 2). 320 Johnson St. - perforated corrugated pipe catch basin 3 and 4
- 3). 320 Johnson St. - catch basin 8-9 perforated Corrugated pipe.

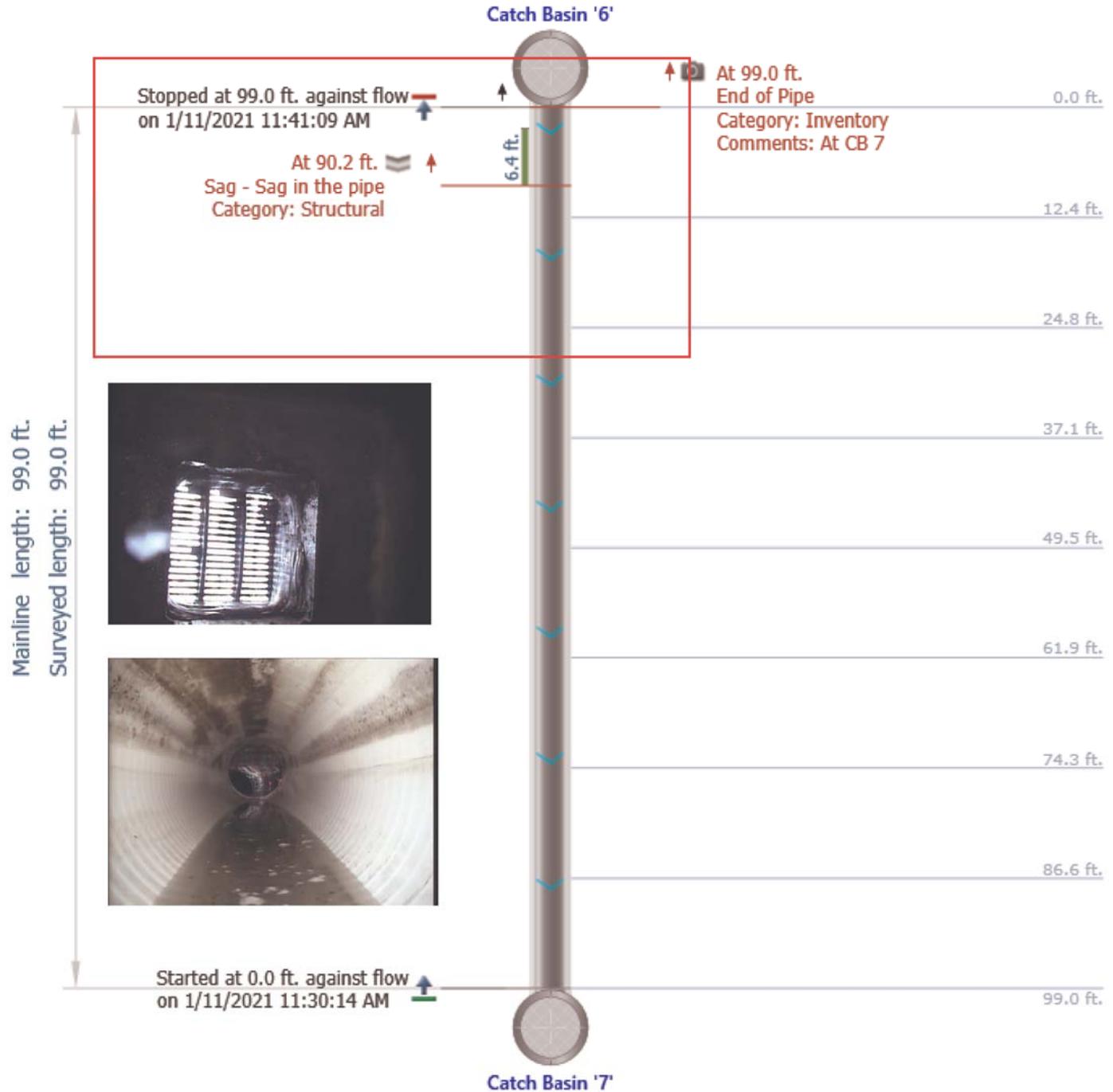
Main Inspections Pipe Run

Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 3-4	City: Hollywood	Address: 320 Johnson St
Start date/time: 1/11/2021 9:38 AM	Direction: Against the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: PVC	Pipe height: 15.0 in.	Pipe width:



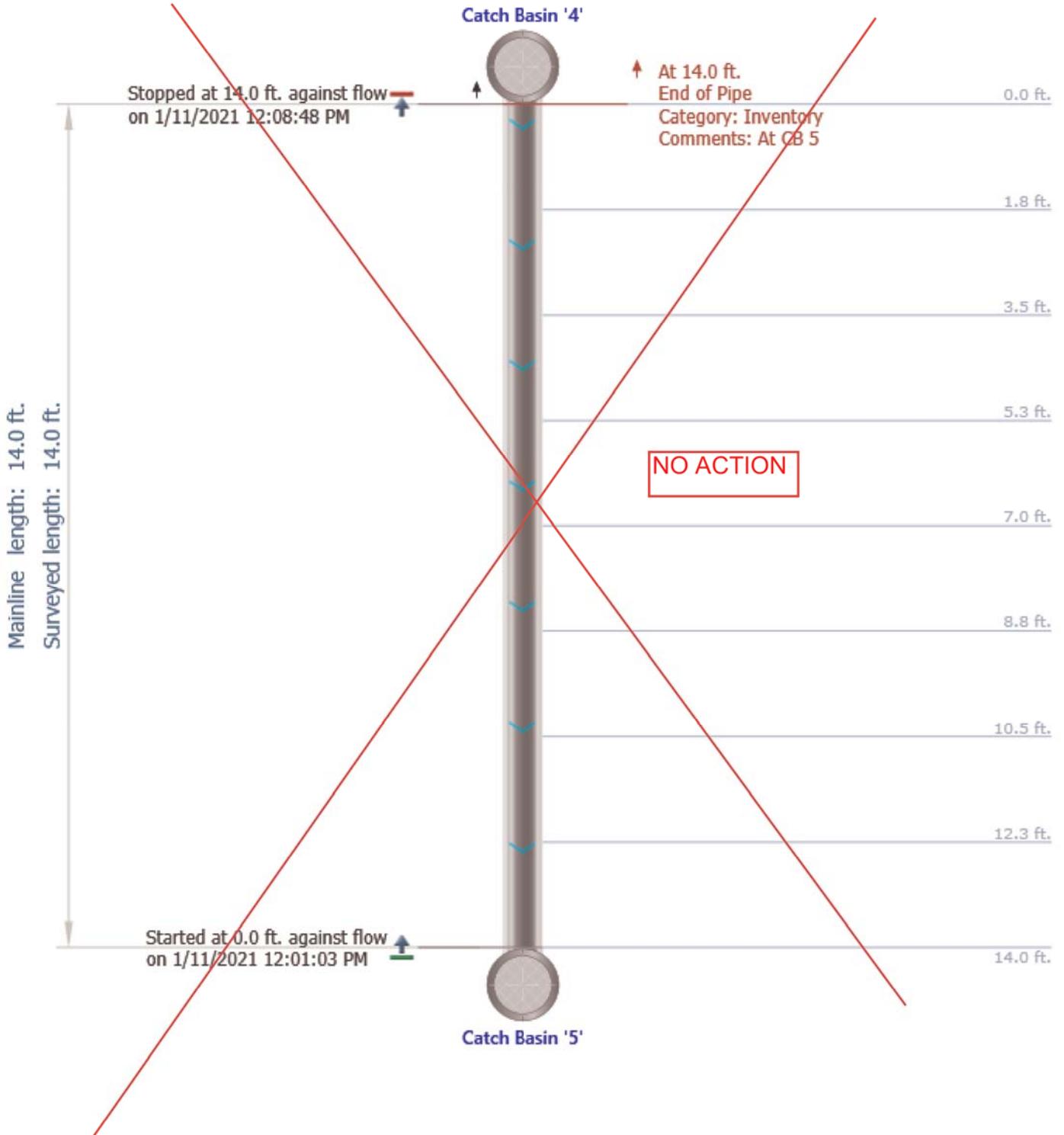
Main Inspections Pipe Run

Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 6-7	City: Hollywood	Address: 320 Johnson st
Start date/time: 1/11/2021 11:30 AM	Direction: Against the flow	Weather: Dry	Surface condition: Concrete
Pipe shape: Circular	Pipe material: PVC	Pipe height: 15.0 in.	Pipe width:



Main Inspections Pipe Run

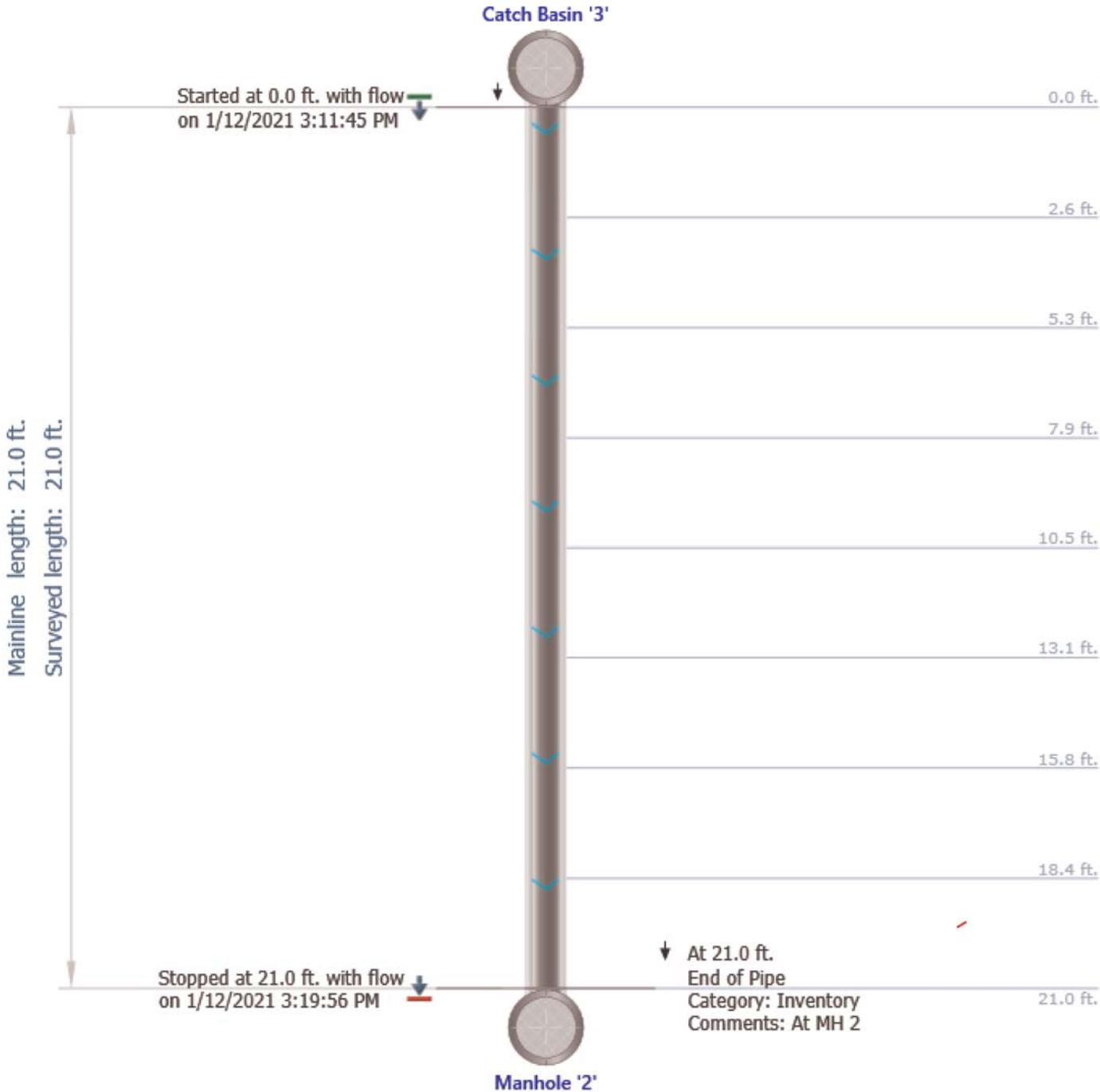
Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 4-5	City: Hollywood	Address: 320 Johnson st
Start date/time: 1/11/2021 12:01 PM	Direction: Against the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: PVC	Pipe height: 15.0 in.	Pipe width:





Main Inspections Pipe Run

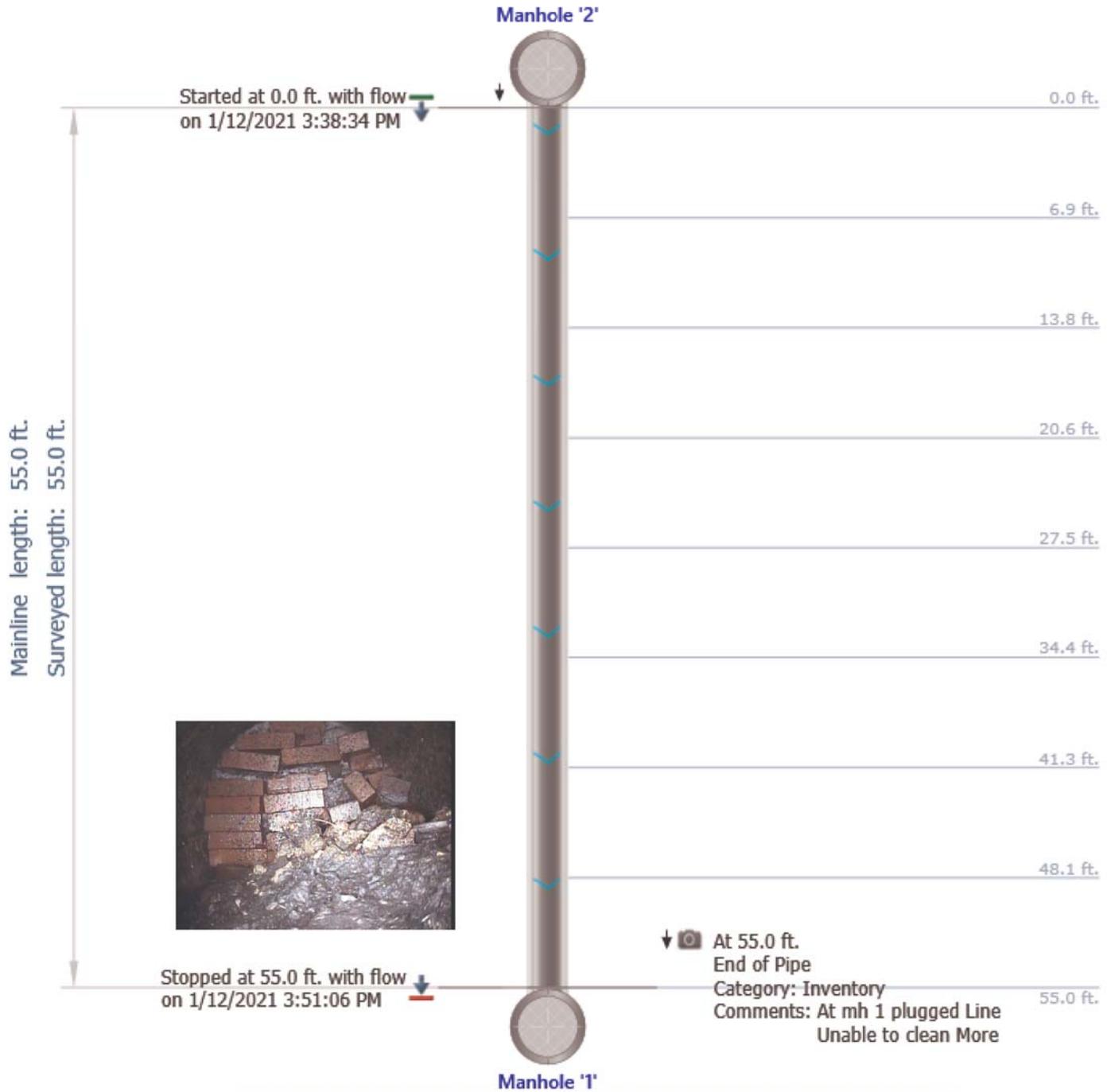
Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 3/2	City: Hollywood	Address: Harrison st & A1A
Start date/time: 1/12/2021 3:11 PM	Direction: With the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: Concrete	Pipe height: 30.0 in.	Pipe width:



1). Harrison and A1A - catch basin in poor condition

Main Inspections Pipe Run

Project name: SOUTHEASTERN ENGINEERING	Mainline ID: 2/1	City: Hollywood	Address: A1A & Harrison st
Start date/time: 1/12/2021 3:38 PM	Direction: With the flow	Weather: Dry	Surface condition: Asphalt
Pipe shape: Circular	Pipe material: Other	Pipe height: 30.0 in.	Pipe width:



1). Harrison and A1A - Manhole 2-1 plugged with bricks that are allowing infiltration.



Flotech Environmental LLC
 5245 NW 36 ST Suite 230
 Miami, FL 33166
 Phone: 786-452-7820

Main Inspections Summary

SOUTHEASTERN ENGINEERING

Mainline ID	End date/time	Operator	Start MH	Finish MH	Pipe material	Pipe height	Asset length	Surveyed
2-1	1/7/2021 12:19 PM	Milton	2	1	Other	18.0 in.	7.0 ft.	7.0 ft.
2_3	1/7/2021 1:01 PM	Milton	3	2	PVC	15.0 in.	67.0 ft.	67.0 ft.
3_4	1/7/2021 3:08 PM	Milton	4	3	PVC	15.0 in.	113.0 ft.	113.0 ft.
5-4	1/7/2021 4:30 PM	Milton	5	4	PVC	15.0 in.	73.0 ft.	73.0 ft.
1_2	1/8/2021 11:05 AM	Milton	2	1	PVC	24.0 in.	61.0 ft.	61.0 ft.
3-4	1/11/2021 9:52 AM	Milton	4	3	PVC	15.0 in.	92.0 ft.	92.0 ft.
5-6	1/11/2021 11:27 AM	Milton	6	5	PVC	15.0 in.	38.1 ft.	38.1 ft.

Mainline ID	End date/time	Operator	Start MH	Finish MH	Pipe material	Pipe height	Asset length	Surveyed
6-7	1/11/2021 11:41 AM	Milton	7	6	PVC	15.0 in.	99.0 ft.	99.0 ft.
4-5	1/11/2021 12:06 PM	Milton	5	4	PVC	15.0 in.	14.0 ft.	14.0 ft.
8-9	1/11/2021 1:56 PM	Milton	9	8	PVC	15.0 in.	103.1 ft.	103.1 ft.
1-2	1/11/2021 3:53 PM	Milton	1	2	Other	18.0 in.	30.0 ft.	30.0 ft.
3/2	1/12/2021 3:19 PM	Milton	3	2	Concrete	30.0 in.	21.0 ft.	21.0 ft.
2/1	1/12/2021 3:51 PM	Milton	2	1	Other	30.0 in.	55.0 ft.	55.0 ft.
Sub-Total							773.2 ft.	773.2 ft.
Total							773.2 ft.	773.2 ft.

1). Johnson St and A1A - Pipe cracked, missing small section
2). 1111 Michigan St. - pipe looks like it dropped off at a joint and also has perforated pipe, catch basin 2 and 3, 3 and 4
3). 320 Johnson St. - perforated corrugated pipe catch basin 3 and 4
4). Harrison and A1A - catch basin in poor condition
5). 1111 Michigan St. - catch basin 5-4 perforated Corrugated pipe.
6). 320 Johnson St. - catch basin 8-9 perforated Corrugated pipe.
7). Harrison and A1A - Catch basin 2-1 plugged with bricks that are allowing infiltration.