Solicitation 673-11892

Stormwater Lining, CCTV and Trenchless Technologies (P12210)

Bid Designation: Public

CITY OF FORT LAUDERDALE

City of Fort Lauderdale

Bid 673-11892
Stormwater Lining, CCTV and Trenchless Technologies (P12210)

Bid Number	673-11892
Bid Title	Stormwater Lining, CCTV and Trenchless Technologies (P12210)
Bid Start Date	May 9, 2017 1:55:13 PM EDT
Bid End Date	Jun 13, 2017 2:00:00 PM EDT
Question & Answer End Date	Jun 6, 2017 5:00:00 PM EDT
Bid Contact	Maureen Lewis Procurement Specialist I Finance 954-828-5239 maureenl@fortlauderdale.gov
Contract Duration	**2 years**
Contract Renewal	See Specifications
Prices Good for	**120 days**

Bid Comments

Sealed bids will be received electronically until 2:00 p.m., local time, on TUESDAY, JUNE 13, 2017, and opened immediately thereafter in the 5th Floor Conference Room, City Hall, 100 North Andrews Avenue, Fort Lauderdale, Florida, 33301, for BID NO., 673-11892, PROJECT NO., 12210, STORMWATER LINING, CLOSED CIRCUIT TELEVISION (CCTV) AND TRENCHLESS TECHNOLOGIES.

There are no drawing files for this Project.

The work includes, but is not limited to, rehabilitation of existing stormwater pipes, varying in size from 6 inch to 84 inch in diameter, and drainage structures (catch basins and manholes) on an as needed basis by using various methods of rehabilitative technologies such as pipe bursting, Cure-in-Place-Pipe (CIPP) liner, Centrifugally Cast Concrete Pipe (CCCP) liner, and others.

The work also includes pre-work and post-work closed circuit television inspection (CCTV) survey, flow monitoring, flow bypass, traffic control, site restoration, replacement of defective piping and drainage structures, resulting in a complete and satisfactory rehabilitation of the stormwater drainage system as required and authorized by the City of Fort Lauderdale.

NOTE: Payment on this contract will be made by Visa or MasterCard.

Licensing Requirements: – Possession of a certified general contractor license OR a certified underground utility and excavation contractor license issued by the Florida Department of Business and Professional Regulation is required for this project. License number shall begin with the letter code "CG" or "CU, respectively.

Pre-Bid Meeting: There will not be a pre-bid meeting for this Project.

While attendance is not mandatory, it is strongly suggested that all Contractors attend the pre-proposal conference. It will be the sole responsibility of the bidder to inspect the City's location(s)/facilities and become familiar with the scope of the City's requirements and systems prior to submitting a proposal. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a proposal will be considered evidence that the proposer has familiarized himself with the nature and extent of the work, equipment, materials, and labor required.

It will be the sole responsibility of the bidder to ensure that his bid is submitted prior to the bid opening date and time listed. PAPER BID SUBMITTALS WILL NOT BE ACCEPTED. BIDS MUST BE SUBMITTED ELECTRONICALLY VIA BIDSYNC.COM

Bid Security: A certified check, cashier's check, bank officer's check or bid bond for FIVE percent (5%) of the bid amount, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal.

Bid Bonds:

Bidders can submit bid bonds for projects four different ways:

BidSync allows bidders to submit bid bonds electronically directly through their system using Surety 2000. For more information on this feature and to access it, contact BIDSYNC customer care department.

Bidders may upload their original executed bid bond on BIDSYNC to accompany their bids with the electronic proposal, and deliver, upon request, the original, signed and sealed hard copy within five (5) business days after bid opening, with the company name, bid number and title clearly indicated.

Bidders can hand deliver their bid bond in a sealed envelope to the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, before time of bid opening, with the company name, bid number and title clearly indicated on the envelope.

Bidders can mail their bid bond to the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, before time of bid opening, with the company name, bid number and title clearly indicated on the envelope.

Certified Checks, Cashier's Checks and Bank Drafts
These cannot be submitted via BIDSYNC, nor are their images allowed to be uploaded and submitted with your electronic bid. These forms of securities, as well as hard copy bid bonds, must be received on or before the Invitation to Bid (ITB) opening date and time, at the Finance Department, Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, with the bid number and title clearly indicated on the envelope.

It is the bidder's sole responsibility to ensure that his bid bond or other bid security is received by the Procurement Services Division before time of bid opening. Failure to adhere to this requirement may be grounds to consider the bid as non-responsive.

The City of Fort Lauderdale reserves the right to waive any informality in any or all bids and to reject any or all bids.

For information concerning technical specifications, please utilize the question/answer feature provided by BIDSYNC at www.bidsync.com. Questions of a material nature must be received prior to the cut-off date specified in the solicitation. Material changes, if any, to the scope of services or bidding procedures, will only be transmitted by written addendum. (See addendum section of BIDSYNC Site). Contractors please note: No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Contractor has familiarized himself with the nature and extent of the work, equipment, materials, and labor required. The entire bid response must be submitted in accordance with all specifications contained in this solicitation.

Information on bid results and projects currently out to bid can be obtained on the City's website – http://www.fortlauderdale.gov/departments/finance/procurement-services. For general inquiries, please call (954) 828-5239.

Item Response Form

Item	**673-11892--01-01 - Base Bid: Mobilization, Demobilization and Maintenance of Traffic (MOT)**
Lot Description	Base Bid
Quantity	**30 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 30

Description
This item is for mobilization and demobilization of equipment, manpower, including base cost and other fixed costs, insurance, bonds, and preparation of maintenance of traffic (MOT) plans (including routing and placement). This item includes staging of equipment in roadways and/or waterways as applicable to each task order. MOT plans shall be prepared by a certified American Traffic Safety Services Association (ATSSA) certified technician. Payment for this item will be for each task order that includes work within 1 mile of the task order location. This item shall not exceed $2,000 per each mobilization and demobilization.

Item	**673-11892--01-02 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**1500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1500

Description
12 inch diameter (or smaller) CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item	**673-11892--01-03 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**1500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1500

Description
15 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item	**673-11892--01-04 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid

Quantity **1500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1500

Description
18 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item **673-11892--01-05 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**

Lot Description Base Bid

Quantity **800 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 800

Description
24 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item **673-11892--01-06 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**

Lot Description Base Bid

Quantity **800 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 800

Description
30 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item **673-11892--01-07 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**

Lot Description Base Bid

Quantity **350 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 350

Description
36 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item	**673-11892--01-08 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**350 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 350

Description
42 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134

Item	**673-11892--01-09 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**350 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 350

Description
48 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. See Specification Sections 02140 and 02134.

Item	**673-11892--01-10 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**100 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 100

Description
60 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. See Specification Sections 02140 and 02134.

Item	**673-11892--01-11 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**100 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 100

Description
72 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. See Specification Sections 02140 and 02134.

Item	**673-11892--01-12 -** Base Bid: Cure**-in-Place-Pipe (CIPP) Stormwater Pipe Liner**
Lot Description	Base Bid
Quantity	**100 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 100

Description
Greater than 72 inch diameter CIPP Storm Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. See Specification Sections 02140 and 02134.

Item	**673-11892--01-13 -** Base Bid: Centrifugally Cast Concrete pipe (CCCP) Stormwater Pipe **Liner**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
30 inch diameter CCCP Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually

installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 051916

Item	**673-11892--01-14 -** Base Bid: Centrifugally Cast Concrete pipe (CCCP) Stormwater Pipe **Liner**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
36 inch diameter CCCP Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 051916

Item	**673-11892--01-15 -** Base Bid: Centrifugally Cast Concrete pipe (CCCP) Stormwater Pipe **Liner**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
48 inch diameter CCCP Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 051916

Item	**673-11892--01-16 -** Base Bid: Centrifugally Cast Concrete pipe (CCCP) Stormwater Pipe **Liner**
Lot Description	Base Bid
Quantity	**250 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 250

Description
60 inch diameter CCCP Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary

components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 051916

Item	**673-11892--01-17 -** Base Bid: Centrifugally Cast Concrete pipe (CCCP) Stormwater Pipe **Liner**
Lot Description	Base Bid
Quantity	**250 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 250

Description
72 inch diameter CCCP Liner. Cost of furnishing and installing stormwater pipe liner based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 051916

Item	**673-11892--01-18 -** Base Bid: Pipe Bursting C**-900, HDPE, or Approved Equal Stormwater Pipe**
Lot Description	Base Bid
Quantity	**750 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 750

Description
12 inch diameter (or smaller) C-900 or HDPE Storm Pipe. Cost of furnishing and installing C-900, HDPE or Approved Equal solid storm pipe via pipe bursting methods based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134. INTERNATIONAL PIPE BURSTING ASSOCIATION SPECIFICATIONS (Or approved Equal) Find at: http://www.teamipr.com/pdf/specification-pipebursting.pdf

---

Item	**673-11892--01-19 -** Base Bid: Pipe Bursting C**-900, HDPE, or Approved Equal Stormwater Pipe**
Lot Description	Base Bid
Quantity	**750 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 750

Description
15 inch diameter C-900 or HDPE Storm Pipe. Cost of furnishing and installing C-900, HDPE or Approved Equal solid storm pipe via

pipe bursting methods based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134. INTERNATIONAL PIPE BURSTING ASSOCIATION SPECIFICATIONS (Or approved Equal) Find at: http://www.teamipr.com/pdf/specification-pipebursting.pdf

---

Item	**673-11892--01-20 -** Base Bid: Pipe Bursting C**-900, HDPE, or Approved Equal Stormwater Pipe**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
18 inch diameter C-900 or HDPE Storm Pipe. Cost of furnishing and installing C-900, HDPE or Approved Equal solid storm pipe via pipe bursting methods based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134. INTERNATIONAL PIPE BURSTING ASSOCIATION SPECIFICATIONS (Or approved Equal) Find at: http://www.teamipr.com/pdf/specification-pipebursting.pdf

---

Item	**673-11892--01-21 -** Base Bid: Pipe Bursting C**-900, HDPE, or Approved Equal Stormwater Pipe**
Lot Description	Base Bid
Quantity	**250 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 250

Description
24 inch diameter C-900 or HDPE Storm Pipe. Cost of furnishing and installing C-900, HDPE or Approved Equal solid storm pipe via pipe bursting methods based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134. INTERNATIONAL PIPE BURSTING ASSOCIATION SPECIFICATIONS (Or approved Equal) Find at: http://www.teamipr.com/pdf/specification-pipebursting.pdf

---

Item	**673-11892--01-22 -** Base Bid: Pipe Bursting C**-900, HDPE, or Approved Equal Stormwater Pipe**
Lot Description	Base Bid
Quantity	**150 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications

Fort Lauderdale FL 33301
Qty 150

Description
30 inch diameter C-900 or HDPE Storm Pipe. Cost of furnishing and installing C-900, HDPE or Approved Equal solid storm pipe via pipe bursting methods based upon pipe size and linear feet actually installed measured along the centerline of the host pipe and including transporting costs, storing, furnishing and installing necessary components, laboratory testing, field testing, bypass pumping, maintenance of traffic, pre-and post-closed circuit television (CCTV), site clean-up, restoration of property back to original or better condition. SPECIFICATION SECTION 02140 & 02134. INTERNATIONAL PIPE BURSTING ASSOCIATION SPECIFICATIONS (Or approved Equal) Find at: http://www.teamipr.com/pdf/specification-pipebursting.pdf

---

Item	**673-11892--01-23 -** Base Bid: Jack and Bore
Lot Description	Base Bid
Quantity	**750 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 750

Description
12 inch (or smaller) Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item	**673-11892--01-24 -** Base Bid: Jack and Bore
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
15 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item	**673-11892--01-25 -** Base Bid: Jack and Bore
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
18 inch (or smaller) Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete

jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556 Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item	**673-11892--01-26 -** Base Bid: Jack and Bore
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
24 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item	**673-11892--01-27 -** Base Bid: Jack and Bore
Lot Description	Base Bid
Quantity	**250 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 250

Description
30 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item	**673-11892--01-28 -** Base Bid: Jack and Bore
Lot Description	Base Bid
Quantity	**250 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 250

Description
36 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item	**673-11892--01-29 -** Base Bid: Jack and Bore
Lot Description	Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
42 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item **673-11892--01-30 -** Base Bid: Jack and Bore

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
48 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556. Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item **673-11892--01-31 -** Base Bid: Jack and Bore

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
60 inch Jack and Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete jacking and boring operations based on the pipe materials per FDOT SPECIFICATION SECTION 556 Pipe Bursting C-900, HDPE, or Approved Equal Stormwater Pipe

---

Item **673-11892--01-32 -** Base Bid: Directional Bore

Lot Description Base Bid

Quantity **750 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301

Qty 750

Description
12 inch (or smaller) Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item	**673-11892--01-33 -** Base Bid: Directional Bore
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
15 inch Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item	**673-11892--01-34 -** Base Bid: Directional Bore
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
18 inch Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item	**673-11892--01-35 -** Base Bid: Directional Bore
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
24 inch Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item	**673-11892--01-36 -** Base Bid: Directional Bore
Lot Description	Base Bid

Quantity **250 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
30 inch Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item **673-11892--01-37 -** Base Bid: Directional Bore

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
42 inch Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item **673-11892--01-38 -** Base Bid: Directional Bore

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
48 inch Directional Bore. Furnish all material, labor, equipment, and appurtenances required for performing complete directional boring operations based on pipe materials per FDOT SPECIFICATION SECTION 555.

Item **673-11892--01-39 -** Base Bid: Repair and Lining of catch basins, inlets and manholes

Lot Description Base Bid

Quantity **50 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 50

Description

Up to 40 inch inside diameter or maximum equivalent dimension (i.e. rectangular). Cost to rehabilitate existing drainage structures such as inlets, manholes and catch basins including labor, materials, pressure washing, surface preparation, repair of drainage structures walls, bottoms or tops, cleaning and dust removal, coating, testing, inspection and related appurtenances by concrete, asphalt or approved equal repair method.

Item	**673-11892--01-40 -** Base Bid: Repair and Lining of catch basins, inlets and manholes
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Over 40 inch to 72 inch inside diameter or maximum equivalent dimension. Cost to rehabilitate existing drainage structures such as inlets, manholes and catch basins including labor, materials, pressure washing, surface preparation, repair of drainage structures walls, bottoms or tops, cleaning and dust removal, coating, testing, inspection and related appurtenances by concrete, asphalt or approved equal repair method.

Item	**673-11892--01-41 -** Base Bid: Repair and Lining of catch basins, inlets and manholes
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Over 72 inch inside diameter or maximum equivalent dimension. Cost to rehabilitate existing drainage structures such as inlets, manholes and catch basins including labor, materials, pressure washing, surface preparation, repair of drainage structures walls, bottoms or tops, cleaning and dust removal, coating, testing, inspection and related appurtenances by concrete, asphalt or approved equal repair method.

Item	**673-11892--01-42 -** Base Bid: Closed Circuit TV Inspection (CCTV) and Pipe Assessment
Lot Description	Base Bid
Quantity	**2000 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2000

Description
6 inch to 12 inch in diameter or maximum equivalent dimension (i.e. elliptical). Cost for preliminary TV inspection based upon actual quantity of linear feet of stormwater pipe inspected via closed circuit television as measured in the field and based on National Association of Sewer Service Companies Pipeline Assessment & Certification Program (NASSCO PACP) guidelines. Unit price, per linear foot, shall constitute full compensation for the preliminary TV inspection and pipe assessment to include all Work and including

a written report of the pipe condition based on NASSCO. (do not include pipe cleaning with this item) SPECIFICATION SECTION 02136

Item	**673-11892--01-43 -** Base Bid: Closed Circuit TV Inspection (CCTV) and Pipe Assessment
Lot Description	Base Bid
Quantity	**2500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2500

Description
15 inch to 18 inch or maximum equivalent dimension. Cost for preliminary TV inspection based upon actual quantity of linear feet of stormwater pipe inspected via closed circuit television as measured in the field and based on National Association of Sewer Service Companies Pipeline Assessment & Certification Program (NASSCO PACP) guidelines. Unit price, per linear foot, shall constitute full compensation for the preliminary TV inspection and pipe assessment to include all Work and including a written report of the pipe condition based on NASSCO. (do not include pipe cleaning with this item) SPECIFICATION SECTION 02136

Item	**673-11892--01-44 -** Base Bid: Closed Circuit TV Inspection (CCTV) and Pipe Assessment
Lot Description	Base Bid
Quantity	**2500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2500

Description
24 inch to 36 inch or maximum equivalent dimension. Cost for preliminary TV inspection based upon actual quantity of linear feet of stormwater pipe inspected via closed circuit television as measured in the field and based on National Association of Sewer Service Companies Pipeline Assessment & Certification Program (NASSCO PACP) guidelines. Unit price, per linear foot, shall constitute full compensation for the preliminary TV inspection and pipe assessment to include all Work and including a written report of the pipe condition based on NASSCO. (do not include pipe cleaning with this item) SPECIFICATION SECTION 02136

Item	**673-11892--01-45 -** Base Bid: Closed Circuit TV Inspection (CCTV) and Pipe Assessment
Lot Description	Base Bid
Quantity	**1500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1500

Description
42 inch to 72 inch or maximum equivalent dimension. Cost for preliminary TV inspection based upon actual quantity of linear feet of stormwater pipe inspected via closed circuit television as measured in the field and based on National Association of Sewer Service Companies Pipeline Assessment & Certification Program (NASSCO PACP) guidelines. Unit price, per linear foot, shall constitute full compensation for the preliminary TV inspection and pipe assessment to include all Work and including a written report of the pipe

condition based on NASSCO. (do not include pipe cleaning with this item) SPECIFICATION SECTION 02136

Item **673-11892--01-46 -** Base Bid: Pipe Cleaning

Lot Description Base Bid

Quantity **2000 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2000

Description
Up to 12 inch in diameter or maximum equivalent dimension. Cost for cleaning stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately see Item #12) SPECIFICATION SECTION 02136 & 02650

Item **673-11892--01-47 -** Base Bid: Pipe Cleaning

Lot Description Base Bid

Quantity **2500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2500

Description
15 inch to 18 inch in diameter or maximum equivalent dimension. Cost for cleaning stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately see Item #12) SPECIFICATION SECTION 02136 & 02650

Item **673-11892--01-48 -** Base Bid: Pipe Cleaning

Lot Description Base Bid

Quantity **2500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2500

Description
24 inch to 36 inch in diameter or maximum equivalent dimension. Cost for cleaning stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately see Item #12) SPECIFICATION SECTION 02136 & 02650

Item **673-11892--01-49 -** Base Bid: Pipe Cleaning

Lot Description Base Bid

Quantity **1500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1500

Description
Over 36 inch in diameter or maximum equivalent dimension. Cost for cleaning stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately see Item #12) SPECIFICATION SECTION 02136 & 02650

Item **673-11892--01-50 -** Base Bid: Mechanical Tuberculation Removal

Lot Description Base Bid

Quantity **500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
Up to 12 inch in diameter or maximum equivalent dimension. Cost for tuberculation cleaning of stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately)

Item **673-11892--01-51 -** Base Bid: Mechanical Tuberculation Removal

Lot Description Base Bid

Quantity **750 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 750

Description
15 inch to 18 inch in diameter or maximum equivalent dimension. Cost for tuberculation cleaning of stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately)

Item **673-11892--01-52 -** Base Bid: Mechanical Tuberculation Removal

Lot Description Base Bid

Quantity **500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
24 inch to 36 inch in diameter or maximum equivalent dimension. Cost for tuberculation cleaning of stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately)

Item	**673-11892--01-53 -** Base Bid: Mechanical Tuberculation Removal
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Over 36 inch in diameter or maximum equivalent dimension. Cost for tuberculation cleaning of stormwater pipe based upon actual quantity of linear feet, jetted, vacuumed or other approved method based on NASSCO PACP guideline and measured in the field. (CCTV - billed separately)

Item	**673-11892--01-54 -** Base Bid: Cleaning of Catch Basins, Inlets, Manholes, Pollution Control **Devices, and other**
Lot Description	Base Bid
Quantity	**2500 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2500

Description
Unit price for cleaning of stormwater structures includes all labor, materials, equipment and services necessary to pressure washing, jetting, and/or vacuuming of debris found in various drainage structures, walls, bottoms or tops, cleaning and dust removal, testing, inspection, and/or any related appurtenances, including proper disposal of used water per environmental regulations, and re-installation of any drainage appurtenance, baffles or other devices found in the existing storm structure, to existing or better condition.

Item	**673-11892--01-55 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**1000 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1000

Description
CIP Cleaning, Less than or equal to 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at

http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-56 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
CIP Cleaning, Greater than 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-57 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**1000 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1000

Description
CMP Cleaning, Less than or equal to 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-58 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
CMP Cleaning, Greater than 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-59 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**1000 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1000

Description
RCP Cleaning, Less than or equal to 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-60 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
RCP Cleaning, Greater than 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-61 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**1000 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1000

Description
HDPE, Less than or equal to 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-62 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
HDPE, Greater than 24 inch pipe diameter. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-63 -** Base Bid: Special Cleaning & disposal of Hazardous or Toxic waste from **Pipe and structures**
Lot Description	Base Bid
Quantity	**1500 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1500

Description
Drainage Structures Cleaning. Cost to clean hazardous toxic waste or biochemical waste if found during inspection of any storm piping or drainage structure as in accordance with applicable Florida and Federal hazardous materials compliance regulations as requested or approved by City. SPECIFICATIONS 02650, 02250 and DEP specifications found at http://www.dep.state.fl.us/waste/categories/hazardous/pages/laws.htm

Item	**673-11892--01-64 -** Base Bid: Cleaning of Drainage Wells
Lot Description	Base Bid
Quantity	**25 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 25

Description
Unit price for cleaning of stormwater wells and well vaults includes all labor, materials, equipment and services necessary to pressure washing, jetting, and/or vacuuming of debris found in various drainage wells, including testing, inspection, proper disposal of used water per environmental regulations, re-installation of any drainage appurtenances found in the existing storm well to existing or better condition.

Item	**673-11892--01-65 -** Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Furnish 8 inch diameter (or smaller) inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-66 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Install 8 inch diameter (or smaller) inline checkmate valve.

Item **673-11892--01-67 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Furnish 10 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-68 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description

Install 10 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-69 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
Furnish 12 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-70 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
Install 12 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-71 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
Furnish 15 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-72 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 15

Description
Install 15 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-73 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 15

Description
Furnish 18 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-74 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 15

Description
Install 18 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-75 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **8 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 8

Description
Furnish 24 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-76 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Install 24 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-77 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**5 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 5

Description
Furnish 30 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-78 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**5 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 5

Description
Install 30 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE

MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-79 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**5 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 5

Description
Furnish 36 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-80 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**5 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 5

Description
Install 36 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-81 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**2 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2

Description
Furnish 42 inch diameter inline checkmate valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-82 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**2 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2

Description
Install 42 inch inline checkmate valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-83 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **2 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2

Description
Furnish 48 inch diameter inline checkmate valve with flange. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-84 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**

Lot Description Base Bid

Quantity **2 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2

Description
Install 48 inch inline checkmate valve with flange. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-85 -** Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves

Lot Description Base Bid

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301

Qty 1

Description
Furnish 60 inch diameter inline checkmate valve with flange. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-86 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**1 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1

Description
Install 60 inch inline checkmate valve with flange. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-87 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**1 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1

Description
Furnish 72 inch diameter or greater inline checkmate valve with flange. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-88 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**1 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1

Description
Install 72 inch inline checkmate valve with flange. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.Tideflex.com or contact (412) 279-0044 for the latest tideflex inline checkmate valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-89 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**2 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2

Description
Furnish Elliptical Inline checkmate valves (For pipe sizes between 12 inch and 24 inch (or equivalent pipe diameter). Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-90 -** Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves
Lot Description	Base Bid
Quantity	**2 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2

Description
Install eliptical Inline checkmate valves for pipe sizes between 12 inch and 24 inch (or equivalent pipe diameter)

Item	**673-11892--01-91 -** Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves
Lot Description	Base Bid
Quantity	**2 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2

Description
Furnish Elliptical Inline checkmate valve (For Pipe sizes between 30 inch and 42 inch (or equivalent pipe diameter). Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-92 - Base Bid: Furnish and Install Tideflex CheckMate Inline Tidal Valves**
Lot Description	Base Bid
Quantity	**2 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301

Qty 2

Description
Install Elliptical Inline checkmate valve for pipe sizes between 30 inch and 42 inch (or equivalent pipe diameter)

Item **673-11892--01-93 -** Base Bid: Furnish WASTOP Tidal Valves

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Furnish 8 inch diameter (or smaller) inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-94 - Base Bid: Installation of WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Install 8 inch diameter (or smaller) inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-95 - Base Bid: Furnish WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Furnish 10 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-96 - Base Bid: Installation of WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **5 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 5

Description
Install 10 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-97 - Base Bid: Furnish WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 15

Description
Furnish 12 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-98 - Base Bid: Installation of WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 15

Description
Install 12 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-99 - Base Bid: Furnish WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications

Fort Lauderdale FL 33301
Qty 15

Description
Furnish 15 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-100 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
Install 15 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-101 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
Furnish 18 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-102 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
Install 18 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-103 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Furnish 24 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-104 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Install 24 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-105 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Furnish 30 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-106 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 8

Description
Install 30 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-107 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Furnish 36 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-108 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Install 36 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-109 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Furnish 42 inch diameter inline Wastop valve. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-110 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Install 42 inch inline Wastop valve. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-111 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Furnish 48 inch diameter inline Wastop valve with flange. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item	**673-11892--01-112 - Base Bid: Installation of WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**8 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 8

Description
Install 48 inch inline Wastop valve with flange. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-113 - Base Bid: Furnish WASTOP Tidal Valves**
Lot Description	Base Bid
Quantity	**1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1

Description
Furnish 60 inch diameter inline Wastop valve with flange. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-114 - Base Bid: Installation of WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1

Description
Install 60 inch inline Wastop valve with flange. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item **673-11892--01-115 - Base Bid: Furnish WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1

Description
Furnish 72 inch diameter or larger inline Wastop valve with flange. Furnish includes all fittings, accessories and appurtenances, including delivery of material to Project site as requested by City.

Item **673-11892--01-116 - Base Bid: Installation of WASTOP Tidal Valves**

Lot Description Base Bid

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1

Description

Install 72 inch inline Wastop valve with flange. Install includes labor, tools and equipment to install valve with all fittings and excavation, grading, removal and disposal of soil and debris and all other necessary appurtenances per City and manufacturers specifications. See www.wapro.com or contact (888) 927-8677 for the latest inline WaStop valve specifications. INSTALLED ON ANY PIPE MATERIAL SPECIFICATION SECTION 33410

Item	**673-11892--01-117 - Base Bid: Maintenance and Repair Services for Tidal Valves**
Lot Description	Base Bid
Quantity	**120 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 120

Description

Provide MAINTENANCE AND REPAIR SERVICES, to existing valves installed on storm pipes/inlets including the following tasks: a) Remove all debris and standing water from basins and drainage pipes using a dewatering pump, dewatering box (es) and silt fence at basins prior to discharge; b) Remove any pollution retardant baffles or any other appurtenance impeding access to outfall pipes and valves; c) Clean debris inside the valve and outfall pipe; d) Inspect the materials and working condition of the valve; e) Tighten the clamps on the valve and/or remove and re-install valve if approved by CITY and as needed; f) Re-install the pollution; retardant baffle in the storm basin; g) Close basin with the grate or cover, and h) Write an inspection report to be provided to Citys Project Manager. All work to be done under this line items shall be performed at low tide and a city inspector must be present (and called by the contractor prior to start of work) to verify the maintenance work and dewatering set-up. SPECIFICATION SECTION 33410

Item	**673-11892--01-118 -** Base Bid: Root Removal (For All Pipe Sizes)
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description

Cost for root removal based upon the actual quantity of linear feet of pipe segments where roots are removed as measured in the field at the unit price per linear foot and shall constitute full compensation for root removal to include all Work. SPECIFICATION SECTION 02660 & 02134

Item	**673-11892--01-119 -** Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description

8 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

Item	**673-11892--01-120** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
10 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

Item	**673-11892--01-121** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
12 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

Item	**673-11892--01-122** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
15 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

Item	**673-11892--01-123** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
18 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-124** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
24 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-125** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
30 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-126** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
36 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-127** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications

See ITB Specifications
Fort Lauderdale FL 33301
Qty 20

Description
42 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-128** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
48 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-129** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**15 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 15

Description
54 inch diameter outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-130** - Base Bid: Manatee Grate
Lot Description	Base Bid
Quantity	**10 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 10

Description
60 inch diameter (or larger) outfall. Furnish and install manatee grates in outfall pipes per FDOT and City Specifications

---

Item	**673-11892--01-131 - Base Bid: Rubble Rock Seawall Repair**
Lot Description	Base Bid
Quantity	**20 ton**
Unit Price	

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 20

Description
Repair existing rubble rock seawalls, labor and installation, by filling voids with rubble rock material of the appropriate size and non-shrink cement mortar coat not less than 1/4 inch thick.

Item **673-11892--01-132** - Base Bid: Concrete Seawall Repair
Lot Description Base Bid
Quantity **100 cubic foot**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 100

Description
Repairing spalled, broken concrete areas of existing concrete seawalls with epoxy mortar, including removal of loose material to sound concrete, preparing surface and installing steel reinforcement and/or wire mesh if necessary , labor and installation, and as directed by the Project Manager.

Item **673-11892--01-133** - Base Bid: Dewatering
Lot Description Base Bid
Quantity **30 each**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 30

Description
Using Dewatering Pumps. Furnish all material, labor, and equipment required for performing complete dewatering operations including all permitting required. SPECIFICATION SECTION 02240

Item **673-11892--01-134** - Base Bid: Dewatering
Lot Description Base Bid
Quantity **10 each**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 10

Description
Using Well Point System. Furnish all material, labor, and equipment required for performing complete dewatering operations including all permitting required. SPECIFICATION SECTION 02240

Item	**673-11892--01-135 -** Base Bid: By**-Pass Pumping**
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
By-pass piping and pumping between manholes or other locations where work is being done. Work includes placing plugs in each affected manhole or outfall and any other item required to provide a complete functioning by-pass system.SPECIFICATION SECTION 02410

Item	**673-11892--01-136 -** Base Bid: De**-Mucking & Backfill**
Lot Description	Base Bid
Quantity	**500 cubic yard**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Furnish all material, labor, and equipment, for removal and disposal of muck, debris, organic, deleterious, and other unsustainable material up to fifteen (15) feet deep encountered during excavation. Contractor shall backfill with #57 stone or approved material per Specification Section 02315 to provide a stable base for the pipe bed and backfill the bottom of the structure with clean fill. SPECIFICATION SECTIONS 02315, 02316

Item	**673-11892--01-137 -** Base Bid: Sheet Piling
Lot Description	Base Bid
Quantity	**2000 square foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2000

Description
Furnish all material, labor, and equipment to properly install, and extract, steel-piling (Z-piles), shoring and bracing, and all work necessary for a complete installation and removal of sheet piling. SPECIFICATION SECTIONS 02315, 02316, 02320

Item	**673-11892--01-138 -** Base Bid: Limerock Base
Lot Description	Base Bid
Quantity	**200 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
6 inch Limerock Base. Furnish all material, labor, and equipment, to install and compact limerock base. SPECIFICATION SECTION 02710

Item **673-11892--01-139** - Base Bid: Limerock Base

Lot Description Base Bid

Quantity **300 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 300

Description
8 inch Limerock Base. Furnish all material, labor, and equipment, to install and compact limerock base. SPECIFICATION SECTION 02710

Item **673-11892--01-140** - Base Bid: Limerock Base

Lot Description Base Bid

Quantity **300 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 300

Description
12 inch Limerock Base. Furnish all material, labor, and equipment, to install and compact limerock base. SPECIFICATION SECTION 02710

Item **673-11892--01-141** - Base Bid: Flowable Fill

Lot Description Base Bid

Quantity **250 cubic yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
Flowable Fill, type, 100 PSI max, 28 day compressive strength. FDOT SPECIFICATION SECTION 121

Item	**673-11892--01-142** - Base Bid: Support Utility Poles
Lot Description	Base Bid
Quantity	**20 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 20

Description
Cost of coordination efforts with FPL or other utility agencies and to provide labor and equipment necessary to support utility poles in conflict with excavation or other construction activities.

Item	**673-11892--01-143** - Base Bid: Asphaltic Concrete
Lot Description	Base Bid
Quantity	**2000 square yard**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 2000

Description
1 inch Thick. Furnish and install asphaltic concrete (type III, or FC9.5, or SP9.5).SPECIFICATION SECTION 02575 & 02772

Item	**673-11892--01-144** - Base Bid: Asphaltic Concrete
Lot Description	Base Bid
Quantity	**1500 square yard**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 1500

Description
2 inch Thick. Furnish and install asphaltic concrete (type III, or FC9.5, or SP9.5).SPECIFICATION SECTION 02575 & 02772

Item	**673-11892--01-145** - Base Bid: Pavers Restoration
Lot Description	Base Bid
Quantity	**1500 square foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301

Qty 1500

Description
Furnish all material, labor, and equipment, for restoration of existing pavers affected by construction including sand base, leveling and finish sand into joints. Pavers shall match existing conditions and paver pattern. SPECIFICATION SECTION 02575

Item **673-11892--01-146** - Base Bid: Asphalt Milling

Lot Description Base Bid

Quantity **2000 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 2000

Description
1 inch Depth. Furnish all material, labor, and equipment, to mill and dispose of existing asphalt pavement. SPECIFICATION SECTION 02575

Item **673-11892--01-147** - Base Bid: Asphalt Milling

Lot Description Base Bid

Quantity **1500 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1500

Description
2 inch Depth. Furnish all material, labor, and equipment, to mill and dispose of existing asphalt pavement. SPECIFICATION SECTION 02575

Item **673-11892--01-148** - Base Bid: Sodding

Lot Description Base Bid

Quantity **1000 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1000

Description
St. Augustine Sod. Furnish all material, labor, and equipment to properly install sod. Watering and Maintenance included. SPECIFICATION SECTION 02575

Item **673-11892--01-149** - Base Bid: Sodding

Lot Description Base Bid

Quantity	**500 square yard**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Bahia Sod. Furnish all material, labor, and equipment to properly install sod. Watering and Maintenance included. SPECIFICATION SECTION 02575

Item	**673-11892--01-150 -** Base Bid: Sodding
Lot Description	Base Bid
Quantity	**500 square yard**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Seashore Paspalum Sod (SEWATER RESISTANT GRASS). Furnish all material, labor, and equipment to properly install sod. Watering and Maintenance included. SPECIFICATION SECTION 02575

Item	**673-11892--01-151 -** Base Bid: Removal of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Trees up to 6 inch in diameter. Unit Cost as full compensation to remove any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees removed and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-152 -** Base Bid: Removal of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301

Qty 50

Description
Trees 6 inch - 12 inch in diameter. Unit Cost as full compensation to remove any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees removed and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-153 -** Base Bid: Removal of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Trees 12 inch or greater in diameter. Unit Cost as full compensation to remove any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees removed and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-154 -** Base Bid: Removal of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Shrubs up to 5 gallons. Unit Cost as full compensation to remove any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees removed and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-155 -** Base Bid: Removal of Trees greater than **to 12 inches in diameter**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Unit Cost as full compensation to remove any kind of tree based upon actual quantity as measured in the field of trees removed and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-156 -** Base Bid: Replacement of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Trees up to 6 inch in diameter. Unit Cost as full compensation to replace any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees replaced and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-157 -** Base Bid: Replacement of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Trees 6 inch - 12 inch in diameter. Unit Cost as full compensation to replace any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees replaced and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-158 -** Base Bid: Replacement of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Trees 12 inch or greater in diameter. Unit Cost as full compensation to replace any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees replaced and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item	**673-11892--01-159 -** Base Bid: Replacement of Shrubs and Trees (less than 12 inches in **diameter)**
Lot Description	Base Bid

Quantity **50 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 50

Description
Shrubs up to 5 gallons. Unit Cost as full compensation to replace any kind of shrubs and trees based upon actual quantity as measured in the field of shrubs and trees replaced and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item **673-11892--01-160 -** Base Bid: Replacement of Trees greater than **to 12 inches in diameter**

Lot Description Base Bid

Quantity **50 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 50

Description
Unit Cost as full compensation to replace any kind of tree based upon actual quantity as measured in the field of trees replaced and restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item **673-11892--01-161 -** Base Bid: Tree Relocation (less than 12 inches in diameter)

Lot Description Base Bid

Quantity **50 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 50

Description
Unit cost as full compensation to relocate trees based upon actual quantity as measured in the field of trees relocated including all restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item **673-11892--01-162 -** Base Bid: Tree Relocation (greater than or equal to 12 inches in **diameter)**

Lot Description Base Bid

Quantity **50 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 50

Description
Unit cost as full compensation to relocate trees based upon actual quantity as measured in the field of trees relocated including all restoration to complete the Work. SPECIFICATION SECTION 02481 & 02930

Item **673-11892--01-163** - Base Bid: Baled Hay

Lot Description Base Bid

Quantity **250 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
Furnish and install baled hay for erosion control during construction. FDOT SPECIFICATION SECTION 104

Item **673-11892--01-164** - Base Bid: Synthetic Bales

Lot Description Base Bid

Quantity **250 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
Furnish and install synthetic bales for erosion control during construction. FDOT SPECIFICATION SECTION 104

Item **673-11892--01-165** - Base Bid: Sediment Barrier

Lot Description Base Bid

Quantity **250 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
Furnish and install sediment barriers for erosion control during construction. FDOT SPECIFICATION SECTION 104

Item **673-11892--01-166** - Base Bid: Staked Silt Fence

Lot Description Base Bid

Quantity **250 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
Furnish and install stacked silt fence for erosion control during construction. FDOT SPECIFICATION SECTION 104

Item **673-11892--01-167** - Base Bid: Rock Bags
Lot Description Base Bid
Quantity **250 each**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 250

Description
Furnish and install rock bags for controlling siltation at curb & gutter inlets. Bags are to be 12 inch x 12 inch x 4 inch. FDOT SPECIFICATION SECTION 104

Item **673-11892--01-168** - Base Bid: Floating Silt Barrier/Turbidity Barrier
Lot Description Base Bid
Quantity **500 linear foot**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
Furnish and install a floating silt barrier for erosion control during construction. Includes maintenance, relocation and removal.

Item **673-11892--01-169** - Base Bid: Demolition of Sidewalk
Lot Description Base Bid
Quantity **500 square foot**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
Removal and disposal of existing sidewalks up to 8 inch thick, including ramps and miscellaneous concrete.SPECIFICATION SECTION 02220

Item **673-11892--01-170** - Base Bid: Demolition of Curb & Gutter

Lot Description Base Bid

Quantity **1000 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1000

Description
Removal and disposal of existing concrete curb & gutter. SPECIFICATION SECTION 02220

Item **673-11892--01-171** - Base Bid: Relocation of Existing Mail Box

Lot Description Base Bid

Quantity **15 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 15

Description
Furnish all material, labor, and equipment, to relocate any existing mail box.

Item **673-11892--01-172** - Base Bid: Concrete Curb & Gutter Type F

Lot Description Base Bid

Quantity **1000 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 1000

Description
Furnish all material, labor, and equipment, to install type F concrete curb & gutter. SPECIFICATION SECTION 02771

Item **673-11892--01-173** - Base Bid: Concrete Curb **Type D, inchRA inch or inchA inch**

Lot Description Base Bid

Quantity **500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
Furnish all material, labor, and equipment, to install type D, RA or inchA inchconcrete curb. SPECIFICATION SECTION 02771

Item	**673-11892--01-174** - Base Bid: Concrete Valley Gutter
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Furnish all material, labor, and equipment, to install concrete valley gutter. SPECIFICATION SECTION 02771

Item	**673-11892--01-175** - Base Bid: Concrete Sidewalk (6 inch thick)
Lot Description	Base Bid
Quantity	**750 square yard**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 750

Description
Furnish all material, labor, and equipment, to install 6 inch thick concrete sidewalk. Class I concrete, minimum 3000 PSI. SPECIFICATION SECTION 02771

Item	**673-11892--01-176** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Chain Link Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

Item	**673-11892--01-177** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications

See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Relocation of Existing Chain Link Fence (greater than 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

---

Item	**673-11892--01-178** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Decorative PVC/ Vinyl Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

---

Item	**673-11892--01-179** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Decorative PVC/ Vinyl Fence (greater than 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

---

Item	**673-11892--01-180** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Decorative Wood Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

Item	**673-11892--01-181** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Decorative Wood Fence (greater than 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

Item	**673-11892--01-182** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Decorative Aluminum Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

Item	**673-11892--01-183** - Base Bid: Relocation of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Relocation of Existing Decorative Aluminum Fence (greater than 6 feet in height). Furnish all material, labor, and equipment, to relocate existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes new posts and/or misc. hardware necessary to reinstall fencing

Item	**673-11892--01-184** - Base Bid: Removal of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Removal of Existing Chain Link Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to remove and dispose of existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes disposal of all material and debris resulting from work performed to remove any existing fencing.

Item **673-11892--01-185** - Base Bid: Removal of Existing Fence

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Removal of Existing Chain Link Fence (greater than 6 feet in height)

Item **673-11892--01-186** - Base Bid: Removal of Existing Fence

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Removal of Existing Decorative PVC/ Vinyl Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to remove and dispose of existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes disposal of all material and debris resulting from work performed to remove any existing fencing.

Item **673-11892--01-187** - Base Bid: Removal of Existing Fence

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Removal of Existing Decorative PVC/ Vinyl Fence (greater than 6 feet in height)

Item	**673-11892--01-188** - Base Bid: Removal of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Removal of Existing Decorative Wood Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to remove and dispose of existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes disposal of all material and debris resulting from work performed to remove any existing fencing.

Item	**673-11892--01-189** - Base Bid: Removal of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Removal of Existing Decorative Wood Fence (greater than 6 feet in height). Furnish all material, labor, and equipment, to remove and dispose of existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes disposal of all material and debris resulting from work performed to remove any existing fencing.

Item	**673-11892--01-190** - Base Bid: Removal of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
Removal of Existing Decorative Aluminum Fence (up to 6 feet in height). Furnish all material, labor, and equipment, to remove and dispose of existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes disposal of all material and debris resulting from work performed to remove any existing fencing.

Item	**673-11892--01-191** - Base Bid: Removal of Existing Fence
Lot Description	Base Bid
Quantity	**200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Removal of Existing Decorative Aluminum Fence (greater than 6 feet in height). Furnish all material, labor, and equipment, to remove and dispose of existing chain link fence, decorative PVC/Vinyl fence, decorative wood fence, or decorative aluminum. Includes disposal of all material and debris resulting from work performed to remove any existing fencing.

Item **673-11892--01-192 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Storm Pipe 6-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-193 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Storm Pipe 8-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-194 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Storm Pipe 10-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-195 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
Storm Pipe 12-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-196 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **500 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 500

Description
Storm Pipe 15-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-197 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description

Storm Pipe 18-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-198 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description

Storm Pipe 24-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-199 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description

Storm Pipe 30-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock,

asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-200 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**
Lot Description	Base Bid
Quantity	**150 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 150

Description

Storm Pipe 36-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-201 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**
Lot Description	Base Bid
Quantity	**100 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 100

Description

Storm Pipe 42-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-202 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**
Lot Description	Base Bid
Quantity	**100 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 100

Description

Storm Pipe 48-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-203 - Base Bid: HDPE or PVC C-900 Stormwater Pipe Replacement**
Lot Description	Base Bid
Quantity	**100 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 100

Description

Storm Pipe 54-inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-204 -** Base Bid: HDPE or PVC C**-900 Stormwater Pipe Replacement**
Lot Description	Base Bid
Quantity	**150 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 150

Description

Storm Pipe 60-inch to 72 inch. Cost to repair or replace existing solid, smooth interior stormwater HDPE or C-900 PVC pipe located between five (5) to fifteen (15) feet deep, including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-205 -** Base Bid: RCP Stormwater Pipe Replacement
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications

See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Storm Pipe 12 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-206** - Base Bid: RCP Stormwater Pipe Replacement
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Storm Pipe 15 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-207** - Base Bid: RCP Stormwater Pipe Replacement
Lot Description	Base Bid
Quantity	**500 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 500

Description
Storm Pipe 18 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-208** - Base Bid: RCP Stormwater Pipe Replacement
Lot Description	Base Bid
Quantity	**200 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 200

Description
Storm Pipe 24 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-209 -** Base Bid: RCP Stormwater Pipe Replacement

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
Storm Pipe 30 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-210 -** Base Bid: RCP Stormwater Pipe Replacement

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description
Storm Pipe 36 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-211 -** Base Bid: RCP Stormwater Pipe Replacement

Lot Description Base Bid

Quantity **150 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 150

Description

Storm Pipe 42 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-212 -** Base Bid: RCP Stormwater Pipe Replacement

Lot Description Base Bid

Quantity **100 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 100

Description

Storm Pipe 48 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item **673-11892--01-213 -** Base Bid: RCP Stormwater Pipe Replacement

Lot Description Base Bid

Quantity **100 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
Qty 100

Description

Storm Pipe 54 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of

limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-214** - Base Bid: RCP Stormwater Pipe Replacement
Lot Description	Base Bid
Quantity	**150 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 150

Description
Storm Pipe 60 inch to 72 inch. Cost to repair or replace existing reinforced concrete solid, smooth interior stormwater pipe (RCP) located between five (5) to fifteen (15) feet deep including but not limited to unloading, stringing, excavating, dewatering, removal and disposal of unsuitable materials, bedding, laying, connecting to existing catch basins, core drilling, and filter fabric, backfilling, compacting, restoring project area back to original condition or better, including adjustments of valves, rims, covers and grading and all or other necessary appurtenances. (removal of: asphalt, concrete, paver block, concrete curbing, piping and storm structures and installation of limerock, asphalt and sod covered in separate items) in compliance with Florida Safety Act (90-96, Laws of Florida), SPECIFICATION SECTION 33410

Item	**673-11892--01-215** - Base Bid: Relocation of Existing Signs
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Furnish all material, labor, and equipment, to relocate any single post sign.

Item	**673-11892--01-216** - Base Bid: Permanent Reflective Pavement Markers
Lot Description	Base Bid
Quantity	**50 each**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 50

Description
Furnish and install permanent reflective pavement markers. Pavement markers are to be bi-directional. (Various Colors) SPECIFICATION SECTION 02761

Item **673-11892--01-217** - Base Bid: Thermoplastic Traffic Stripes

Lot Description Base Bid

Quantity **750 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications

See ITB Specifications

Fort Lauderdale FL 33301

Qty 750

Description

4 inch White, Blue or Yellow Thermoplastic. Furnish all material, labor, and equipment, to install thermoplastic traffic striping including temporary paint where necessary per Broward Countys & FDOTs specifications. SPECIFICATION SECTION 02761

Item **673-11892--01-218** - Base Bid: Thermoplastic Traffic Stripes

Lot Description Base Bid

Quantity **750 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications

See ITB Specifications

Fort Lauderdale FL 33301

Qty 750

Description

6 inch White, Blue or Yellow Thermoplastic. Furnish all material, labor, and equipment, to install thermoplastic traffic striping including temporary paint where necessary per Broward Countys & FDOTs specifications. SPECIFICATION SECTION 02761

Item **673-11892--01-219** - Base Bid: Thermoplastic Traffic Stripes

Lot Description Base Bid

Quantity **750 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications

See ITB Specifications

Fort Lauderdale FL 33301

Qty 750

Description

6 inch White, Blue or Yellow Thermoplastic Skips (10-30-, 6-10, 3-9, 2-4). Furnish all material, labor, and equipment, to install thermoplastic traffic striping including temporary paint where necessary per Broward Countys & FDOTs specifications. SPECIFICATION SECTION 02761

Item **673-11892--01-220** - Base Bid: Thermoplastic Traffic Stripes

Lot Description Base Bid

Quantity **1000 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications

See ITB Specifications

Fort Lauderdale FL 33301

Qty 1000

Description
6 inch double Yellow Thermoplastic. Furnish all material, labor, and equipment, to install thermoplastic traffic striping including temporary paint where necessary per Broward Countys & FDOTs specifications. SPECIFICATION SECTION 02761

Item	**673-11892--01-221** - Base Bid: Thermoplastic Traffic Stripes
Lot Description	Base Bid
Quantity	**300 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 300

Description
12 inch White Thermoplastic. Furnish all material, labor, and equipment, to install thermoplastic traffic striping including temporary paint where necessary per Broward Countys & FDOTs specifications. SPECIFICATION SECTION 02761

Item	**673-11892--01-222** - Base Bid: Thermoplastic Traffic Stripes
Lot Description	Base Bid
Quantity	**200 linear foot**
Unit Price	
Delivery Location	**City of Fort Lauderdale** See ITB Specifications See ITB Specifications Fort Lauderdale FL 33301 **Qty** 200

Description
24 inch White stop bar Thermoplastic. Furnish all material, labor, and equipment, to install thermoplastic traffic striping including temporary paint where necessary per Broward Countys & FDOTs specifications. SPECIFICATION SECTION 02761

CITY OF FORT LAUDERDALE
CONTRACT AND SPECIFICATIONS PACKAGE

BID NO. 673-11892

PROJECT NO. 12210

STORMWATER LINING, CCTV AND TRENCHLESS TECHNOLOGIES

Issued on Behalf of: The Public Works Department
100 North Andrews Avenue
Fort Lauderdale, Florida 33301

ELKIN DIAZ, P.E.
SENIOR PROJECT MANAGER

MAUREEN LEWIS
PROCUREMENT SPECIALIST II
Telephone: (954) 828-5239 E-mail: maureenl@fortlauderdale.gov

TABLE OF CONTENTS

Description **Pages**

I. BID INFORMATION

Invitation to Bid ..... ITB-1 thru ITB-2
Instruction to Bidders ..... IB-1 thru IB-6
Special Conditions ..... SC-1 thru SC-8

II. CONSTRUCTION AGREEMENT (SAMPLE) ..... C-1 thru C-37

III. GENERAL CONDITIONS ..... GC-1 thru GC-11

IV. SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

01000 General Requirements 9
01005 Intent of Drawings and Specifications 1
01010 Summary of Work 2
01025 Measurement and Payment 1
01040 Coordination 9
01300 Submittals 8
Supplement 1 (Contractor Submittal Form) 1
01320 Construction Progress Documentation 4
01500 Construction Facilities and Temporary Controls 17
Supplement 1 (Staging Area Ordinance) 3
Supplement 2 (Temporary MOT Routing Form) 2
Supplement 3 (Door Hanger Notification) 1
01590 Project Sign 2
01600 Material and Equipment 5
01640 Manufacturer's Services 4
Supplement 1 (Manufacturer's Certificate of Proper Installation) 1
01780 Contract Closeout 2
Supplement 1 (Subcontractor Identification Form) 1

DIVISION 2 - SITE CONSTRUCTION

02134 Chemical Grouting Pipe Liner 3
02136 Television Survey 5
02139 Pipe Leakage Testing 3
02140 Cured-In-Place Liner 12
02200 Site Preparation 2
02220 Demolition 2
02240 Dewatering 5
02250 Affected Soil and Liquid Disposal 4
02315 Fill and Backfill 5
02316 Excavation 3
02320 Trench Backfill 7
02410 Flow Bypass Pumping System 6

TABLE OF CONTENTS (continued)

02481 Tree Relocation and Protection....7
02575 Surface Restoration....11
02650 Preparatory Cleaning....4
02660 Root Removal....3
02710 Limerock Base....4
02761 Pavement Marking....6
02771 Concrete Curbs and Sidewalks....3
02772 Asphalt Concrete Paving....6
02911 Soil Preparation....2
02920 Sodding....4
02930 Trees, Plants and Ground Covers....7
02958 Structural Lining for Drainage Structures....4

DIVISION 33 - UTILITIES

33410 Storm Utility Drainage Piping....12

DIVISION 051916

051916 Centrifugally Cast Concrete Pipe (CCCP)
Stormwater Pipe Protective Lining Method....7
051916 Centripipe, Invert-Base Replacement, Permacast PL-12,000
(Technical Data Sheet)....2
051916 Centripipe, Centrfugally Cast Concrete Pipe, Permacast PL-8,000
(Technical Data Sheet)....2

FDOT

FDOT 104 Prevention, Control, and Abatement of Erosion and Water Pollution....8
FDOT 121 Flowable Fill....2
FDOT 555 Directional Bore....5
FDOT 556 Jack and Bore....9

Note: **The following documents are available electronically for completion and documents must be returned with your bid along with your bid security, proof of insurance, and proof of required licenses/certifications.**

CITB Prime Contractor ID Form
CITB Questionnaire Sheets
CITB Trench Safety
CITB Non-Collusion Statement
CITB Contract Payment Method
CITB Construction Bid Certification

INVITATION TO BID

Sealed bids will be received electronically until 2:00 p.m., local time, on **TUESDAY, JUNE 13, 2017,** and opened immediately thereafter in the 5th Floor Conference Room, City Hall, 100 North Andrews Avenue, Fort Lauderdale, Florida, 33301, for **BID NO., 673-11892, PROJECT NO., 12210, STORMWATER LINING, CLOSED CIRCUIT TELEVISION (CCTV) AND TRENCHLESS TECHNOLOGIES.**

There are no drawing files for this Project.

The work includes, but is not limited to, rehabilitation of existing stormwater pipes, varying in size from 6 inch to 84 inch in diameter, and drainage structures (catch basins and manholes) on an as needed basis by using various methods of rehabilitative technologies such as pipe bursting, Cure-in-Place-Pipe (CIPP) liner, Centrifugally Cast Concrete Pipe (CCCP) liner, and others.

The work also includes pre-work and post-work closed circuit television inspection (CCTV) survey, flow monitoring, flow bypass, traffic control, site restoration, replacement of defective piping and drainage structures, resulting in a complete and satisfactory rehabilitation of the stormwater drainage system as required and authorized by the City of Fort Lauderdale.

NOTE: Payment on this contract will be made by Visa or MasterCard.

Licensing Requirements: – Possession of a certified general contractor license OR a certified underground utility and excavation contractor license issued by the Florida Department of Business and Professional Regulation is required for this project. License number shall begin with the letter code "CG" or "CU, respectively.

Pre-Bid Meeting: There will not be a pre-bid meeting for this project.

While attendance is not mandatory, it is strongly suggested that all Contractors attend the pre-proposal conference. It will be the sole responsibility of the bidder to inspect the City's location(s)/facilities and become familiar with the scope of the City's requirements and systems prior to submitting a proposal. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a proposal will be considered evidence that the proposer has familiarized himself with the nature and extent of the work, equipment, materials, and labor required.

It will be the sole responsibility of the bidder to ensure that his bid is submitted prior to the bid opening date and time listed. **PAPER BID SUBMITTALS WILL NOT BE ACCEPTED. BIDS MUST BE SUBMITTED ELECTRONICALLY VIA BIDSYNC.COM**

Bid Security: A certified check, cashier's check, bank officer's check or bid bond for **FIVE** percent **(5%)** of the bid amount, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal.

INVITATION TO BID (continued)

Bid Bonds:

Bidders can submit bid bonds for projects four different ways:

1) BidSync allows bidders to submit bid bonds electronically directly through their system using **Surety 2000**. For more information on this feature and to access it, contact BIDSYNC customer care department.

2) Bidders may **upload** their original executed bid bond on BIDSYNC to accompany their bids with the electronic proposal, and deliver, upon request, the original, signed and sealed hard copy within five (5) business days after bid opening, with the company name, bid number and title clearly indicated.

3) Bidders can **hand deliver** their bid bond in a sealed envelope to the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, before time of bid opening, with the company name, bid number and title clearly indicated on the envelope.

4) Bidders can **mail** their bid bond to the Finance Department/Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, before time of bid opening, with the company name, bid number and title clearly indicated on the envelope.

Certified Checks, Cashier's Checks and Bank Drafts

These **cannot** be submitted via BIDSYNC, nor are their images allowed to be uploaded and submitted with your electronic bid. These forms of securities, as well as hard copy bid bonds, must be received on or before the Invitation to Bid (ITB) opening date and time, at the Finance Department, Procurement Services Division, 100 North Andrews Avenue, Room 619, Fort Lauderdale, FL 33301-1016, with the bid number and title clearly indicated on the envelope.

It is the bidder's sole responsibility to ensure that his bid bond or other bid security is received by the Procurement Services Division before time of bid opening. Failure to adhere to this requirement may be grounds to consider the bid as non-responsive.

The City of Fort Lauderdale reserves the right to waive any informality in any or all bids and to reject any or all bids.

For information concerning technical specifications, please utilize the question/answer feature provided by BIDSYNC at www.bidsync.com. Questions of a material nature must be received prior to the cut-off date specified in the solicitation. Material changes, if any, to the scope of services or bidding procedures, will only be transmitted by written addendum. (See addendum section of BIDSYNC Site). **Contractors please note:** No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Contractor has familiarized himself with the nature and extent of the work, equipment, materials, and labor required. The entire bid response must be submitted in accordance with all specifications contained in this solicitation.

Information on bid results and projects currently out to bid can be obtained on the City's website – http://www.fortlauderdale.gov/departments/finance/procurement-services. For general inquiries, please call (954) 828-5239.

INSTRUCTIONS TO BIDDERS

The following instructions are given for the purpose of guiding bidders in properly preparing their bids or proposals. These directions have equal force and weight with the specifications and strict compliance is required with all of these provisions.

QUALIFICATIONS OF BIDDERS – No proposal will be accepted from, nor will any contract be awarded to, any person who is in arrears to the CITY OF FORT LAUDERDALE, upon any debt or contract, or who has defaulted, as surety or otherwise, upon any obligation to the City, or who is deemed irresponsible or unreliable by the City Commission of Fort Lauderdale.

PERSONAL INVESTIGATION - Bidders shall satisfy themselves by personal investigation, and by such other means as they may think necessary or desirable, as to the conditions affecting the proposed work and the cost. No information derived from maps, plans, specifications, or from the Engineer, City Manager, or their assistants shall relieve the Contractor from any risk or from fulfilling all terms of the contract.

INCONSISTENCIES – Any seeming inconsistency between different provisions of the plans, specifications, proposal or contract, or any point requiring explanation must be inquired into by the bidder, in writing, at least ten (10) days prior to the time set for opening proposals. After proposals are opened, the bidders shall abide by the decision of the Engineer as to such interpretation.

ADDENDA AND INTERPRETATIONS - No interpretations of the meaning of the plans, specifications or other contract documents will be made orally to any bidder. Prospective bidders must request such interpretation in writing as instructed in the bid package. To be considered, such request must be received by the Questions and Answers deadline as indicated in BIDSYNC.COM. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. **It is the bidder's responsibility to verify if addendums have been issued in BIDSYNC.COM.** Failure of any bidder to receive any such addenda or interpretation shall not relieve any bidder from any obligation under his bid as submitted. All addenda so issued shall become a part of the contract document. **Bidder** shall verify **in BIDSYNC.COM** that he has all addenda before submitting a bid.

LEGAL CONDITIONS - Bidders are notified to familiarize themselves with the provisions of the laws of the State of Florida relating to hours of labor on municipal work, and with the provisions of the laws of the State of Florida and the Charter and the ordinances of the City of Fort Lauderdale.

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

FORMS OF PROPOSALS - Each proposal and its accompanying statements must be made on the blanks provided. THE FORMS MUST BE SUBMITTED ELECTRONICALLY, IN GOOD ORDER WITH ALL BLANKS COMPLETED, and must show the name of the bidder and a statement as to its contents.

INSTRUCTIONS TO BIDDERS (continued)

FORMS OF PROPOSALS (CONTINUED) - The proposal must be signed by one duly authorized to do so, and in case signed by a deputy or subordinate, the principal's properly written authority to such deputy or subordinate must accompany the proposal. No proposal will be accepted, for any reason whatsoever, which is not submitted to the City as stated above, within the specified time.

INSURANCE - Contractor shall provide and shall require all of its sub-contractors to provide, pay for, and maintain in force at all times during the term of the Agreement, such insurance, including Property Insurance (Builder's Risk), Commercial General Liability Insurance, Business Automobile Liability Insurance, Workers' Compensation Insurance, Employer's Liability Insurance, and Umbrella/Excess Liability, as stated below. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida.

BID BOND - A certified check, cashier's check or bank officer's check, for the sum set forth in the advertisement, made payable to the City of Fort Lauderdale, Florida, or bid bond in such amount, shall accompany each proposal as evidence of the good faith and responsibility of the bidder. The check or bond shall be retained by the City as liquidated damages should the bidder refuse to or fail to enter into a contract for the execution of the work embraced in this proposal, in the event the proposal of the bidder is accepted. Retention of such amount shall not be construed as a penalty or forfeiture.

The above bond or check shall be a guarantee that the bidder will, if necessary, promptly execute a satisfactory contract and furnish good and sufficient bonds. As soon as a satisfactory contract has been executed and the bonds furnished and accepted, the check or bond accompanying the proposal of the successful bidder will be returned to him. The certified or other checks or bid bonds of the unsuccessful bidders will be returned to them upon the acceptance of the bid of the successful bidder. If the successful bidder shall not enter into, execute, and deliver such a contract and furnish the required bonds within ten (10) days after receiving notice to do so, the certified or other check or bid bond shall immediately become the property of the City of Fort Lauderdale as liquidated damages. Retention of such amount shall not be construed as a penalty or forfeiture.

FILLING IN BIDS - All prices must be electronically submitted in the proposal pages, and all proposals must fully cover all items for which proposals are asked and no other. Bidders are required to state the names and places of residence of all persons interested, and if no other person is interested, the bidder shall distinctly state such fact and shall state that the proposal is, in all respects, fair and without collusion or fraud. Where more than one person is interested, it is required that all persons interested or their legal representative make all verification and subscribe to the proposal.

PRICES QUOTED: Deduct any discount offered and quote firm net unit prices. In the case of a discrepancy in computing the amount of the bid, the unit price quoted will govern. All prices quoted shall be F.O.B. destination, freight prepaid (Bidder pays and bears freight charges, Bidder owns goods in transit and files any claims), unless otherwise stated in Special Conditions. Each item must be bid separately. No attempt shall be made to tie any item or items contained in the ITB with any other business with the City.

BIDS FIRM FOR ACCEPTANCE: Bidder warrants, by virtue of bidding, that his bid and the prices quoted in his bid will be firm for acceptance by the City for a period of one hundred and twenty (120) days from the date of bid opening unless otherwise stated in the ITB. The City shall award contract within this time period or shall request to the recommended awarded vendor an extension to hold pricing, until products/services have been awarded.

ADDITIONAL ITEMS OR SERVICES: The City may require additional items or services of a similar nature, but not specifically listed in the contract. The Contractor agrees to provide such items or

INSTRUCTIONS TO BIDDERS (continued)

services, and shall provide the City prices on such additional items or services. If the price(s) offered are not acceptable to the City, and the situation cannot be resolved to the satisfaction of the City, the City reserves the right to procure those items or services from other vendors, or to cancel the contract upon giving the Contractor thirty (30) days written notice.

DELETION OR MODIFICATION OF SERVICES: The City reserves the right to delete any portion of the Contract at any time without cause, and if such right is exercised by the City, the total fee shall be reduced in the same ratio as the estimated cost of the work deleted bears to the estimated cost of the work originally planned. If work has already been accomplished on the portion of the Contract to be deleted, the Contractor shall be paid for the deleted portion on the basis of the estimated percentage of completion of such portion.

If the Contractor and the City agree on modifications or revisions to the task elements, after the City has approved work to begin on a particular task or project, and a budget has been established for that task or project, the Contractor will submit a revised budget to the City for approval prior to proceeding with the work.

CAUSES FOR REJECTION - No proposal will be canvassed, considered or accepted which, in the opinion of the City Commission, is informal or unbalanced, or contains inadequate or unreasonable prices for any items; each item must carry its own proportion of the cost as nearly as is practicable. Any alteration, erasure, interlineation, or failure to specify bids for all items called for in the schedule shall render the proposal informal.

REJECTION OF BIDS - The City reserves the right to reject any bid if the evidence submitted by the bidder, or if the investigation of such bidder, fails to satisfy the City that such bidder is properly qualified to carry out the obligations and to complete the work contemplated. Any or all proposals will be rejected, if there is reason to believe that collusion exists among bidders. A proposal will be considered irregular and may be rejected, if it shows serious omissions, alterations in form, additions not called for, conditions or unauthorized alternates, or irregularities of any kind. The City reserves the right to reject any or all proposals and to waive such technical errors as may be deemed best for the interests of the City.

BID PROTEST PROCEDURE: Any proposer or bidder who is not recommended for award of a contract and who alleges a failure by the City to follow the City's procurement ordinance or any applicable law may protest to the Procurement Division – Deputy Director of Finance, by delivering a letter of protest within five (5) days after a Notice of Intent to award is posted on the City's website at the following link: http://www.fortlauderdale.gov/purchasing/notices_of_intent.htm. The complete protest ordinance may be found on the City's website at the following link: http://www.fortlauderdale.gov/purchasing/protestordinance.pdf

WITHDRAWALS - Any bidder may, without prejudice to himself, withdraw his proposal at any time prior to the expiration of the time during which proposals may be submitted. Such request for withdrawal must be in writing and signed in the same manner and by the same person who signed the proposal. After expiration of the period for receiving proposals, no proposal can be withdrawn, modified, or explained.

CONTRACT - The bidder to whom award is made shall execute a written contract to do the work and maintain the same in good repair until final acceptance by the proper authorities, and shall furnish good and sufficient bonds as specified within ten (10) days after receiving such contract for execution. If the bidder to whom the first award is made fails to enter into a contract as provided, the award may be annulled and the contract let to the next lowest bidder who is reliable, responsible, and responsive in the opinion of the City Commission, and that bidder shall fulfill every stipulation and obligation as if such bidder were the original party to whom award was made.

INSTRUCTIONS TO BIDDERS (continued)

The contract shall provide that the Contractor agrees to correct any defective or faulty work or material, which may appear within one (1) year after completion of the work and receipt of final payment.

ENFORCEMENT OF SPECIFICATIONS - Copies of the specifications will be placed in the hands of all the assistants to the Engineer and Inspectors employed on the work, who shall enforce each and every requirement of the contract. Such assistants shall have no authority to vary from such requirements.

COPIES OF DRAWING PLANS - Copies of the drawing plans are on file in the Public Works Department, City Hall, 4th Floor, 100 N. Andrews Avenue, Fort Lauderdale, Florida 33301.

SURETY BOND – The Contractor shall execute and record in the public records of Broward County, Florida, a payment and performance bond in an amount at least equal to the Contract Price with a surety insurer authorized to do business in the State of Florida as surety, ("Bond"), in accordance with Section 255.05, Florida Statutes (2014), as may be amended or revised, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents.

The successful bidder shall furnish a performance and payment bond in compliance with Section 255.05, Florida Statutes, written by a Corporate Surety company, holding a Certificate of Authority from the Secretary of the Treasury of the United States as acceptable sureties on federal bonds, in an amount equal to the total amount payable by the terms of the contract, executed and issued by a Resident Agent licensed by and having an office in the State of Florida, representing such Corporate Surety, conditioned for the due and faithful performance of the work, and providing in addition to all other conditions, that if the Contractor, or his or its subcontractors, fail to duly pay for any labor, materials, or other supplies used or consumed by such Contractor, or his or its subcontractor or subcontractors, in performance of the work contracted to be done, the Surety will pay the same in the amount not exceeding the sum provided in such bonds, together with interest at the rate of fifteen percent (15%) per annum, and that they shall indemnify and save harmless the City of Fort Lauderdale to the extent of any and all payments in connection with carrying out of the contract, which the City may be required to make under the law.

The Contractor is required at all times to have a valid surety bond in force covering the work being performed. A failure to have such bond in force at any time shall constitute a default on the part of the Contractor. A bond written by a surety, which becomes disqualified to do business in the State of Florida, shall automatically constitute a failure on the part of the Contractor to meet the above requirements.

Such bond shall continue in effect for one (1) year after completion and acceptance of the work with liability equal to at least twenty-five percent (25%) of contract price, or an additional bond shall be conditioned that the Contractor will correct any defective or faulty work or material which appear within one (1) year after completion of the contract, upon notification by the City, except in contracts which are concerned solely with demolition work, in which cases twenty-five percent (25%) liability will not be applicable.

AUDIT OF CONTRACTOR'S RECORDS - Upon execution of the Contract, the City reserves the right to conduct any necessary audit of the Contractor's records. Such an audit, or audits, may be conducted by the City or its representatives at any time prior to final payment, or thereafter, for a period up to three (3) years. The City may also require submittal of the records from either the Contractor, the Subcontractor, or both. For the purpose of this Section, records shall include all books of account, supporting documents and papers deemed necessary by the City to assure compliance with the contract provisions.

INSTRUCTIONS TO BIDDERS (continued)

Failure of the Contractor or Subcontractor to comply with these requirements may result in disqualification or suspension from bidding for future contracts or disapproval as a Subcontractor at the option of the City.

The Contractor shall assure that each of its Subcontractors will provide access to its records pertaining to the project upon request by the City.

PERIODIC ESTIMATE FOR PARTIAL PAYMENT - After the Contractor has submitted a periodic estimate for partial payment, approved and certified by the Public Works Department, the City shall make payment in the manner provided in the Contract Documents and in accordance with Florida's Prompt Payment Act, Section 218, Florida Statutes.

RESERVATION FOR AWARD AND REJECTION OF BIDS - The City reserves the right to accept or reject any or all bids, part of bids, and to waive minor irregularities or variations to specifications contained in bids, and minor irregularities in the bidding process. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual item basis, or such combination as shall best serve the interest of the City. The City reserves the right to make an award to the responsive and responsible bidder whose product or service meets the terms, conditions, and specifications of the ITB and whose bid is considered to best serve the City's interest. In determining the responsiveness of the offer and the responsibility of the Bidder, the following shall be considered when applicable: the ability, capacity and skill of the Bidder to perform as required; whether the Bidder can perform promptly, or within the time specified, without delay or interference; the character, integrity, reputation, judgment, experience and efficiency of the Bidder; the quality of past performance by the Bidder; the previous and existing compliance by the Bidder with related laws and ordinances; the sufficiency of the Bidder's financial resources; the availability, quality and adaptability of the Bidder's supplies or services to the required use; the ability of the Bidder to provide future maintenance, service or parts; the number and scope of conditions attached to the bid.

MINORITY AND WOMEN BUSINESS ENTERPRISE PARTICIPATION AND BUSINESS - It is the desire of the City of Fort Lauderdale to increase the participation of minority (MBE) and women-owned (WBE) businesses in its contracting and procurement programs. While the City does not have any preference or set aside programs in place, it is committed **to a policy of equitable participation for these firms.** The City of Fort Lauderdale wants to increase the participation of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Small Business Enterprises (SBE) in its procurement activities. If your firm qualifies in accordance with the below definitions please indicate in the space provided in this ITB.

Minority Business Enterprise (MBE) "A Minority Business" is a business enterprise that is owned or controlled by one or more socially or economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background or other similar cause. Such persons include, but are not limited to: Blacks, Hispanics, Asian Americans, and Native Americans.

The term "Minority Business Enterprise" means a business at least fifty-one percent (51%) of which is owned by minority group members or, in the case of a publicly owned business, at least fifty-one percent (51%) of the stock of which is owned by minority group members. For the purpose of the preceding sentence, minority group members are citizens of the United States who include, but are not limited to: Blacks, Hispanics, Asian Americans, and Native Americans.

INSTRUCTIONS TO BIDDERS (continued)

Women Business Enterprise (WBE) a "Women Owned or Controlled Business" is a business enterprise at least fifty-one percent (51%) of which is owned by females or, in the case of a publicly owned business, at least fifty-one percent (51%) of the stock of which is owned by females.

Small Business Enterprise (SBE) "Small Business" means a corporation, partnership, sole proprietorship, or other legal entity formed for the purpose of making a profit, which is independently owned and operated, has either fewer than 100 employees or less than $1,000,000 in annual gross receipts.

BLACK includes persons having origins in any of the Black racial groups of Africa.

WHITE includes persons whose origins are Anglo-Saxon and Europeans and persons of Indo-European decent including Pakistani and East Indian.

HISPANIC includes persons of Mexican, Puerto Rican, Cuban, Central and South American, or other Spanish culture or origin, regardless of race.

NATIVE AMERICAN includes persons whose origins are American Indians, Eskimos, Aleuts, or Native Hawaiians.

ASIAN AMERICAN includes persons having origin in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

DEBARRED OR SUSPENDED BIDDERS OR PROPOSERS - The bidder or proposer certifies, by submission of a response to this solicitation, that neither it nor its principals and subcontractors are presently debarred or suspended by any Federal department or agency.

LOBBYING ACTIVITIES - **ALL CONTRACTORS PLEASE NOTE**: Any contractor submitting a response to this solicitation must comply, if applicable, with City of Fort Lauderdale Ordinance No. C-00-27 & Resolution No. 07-101, Lobbying Activities. Copies of Ordinance No., C-00-27, and Resolution No. 07-101, may be obtained from the City Clerk's Office on the 7th Floor of City Hall, 100 N. Andrews Avenue, Fort Lauderdale, Florida 33301. The ordinance may also be viewed on the City's website at http://www.fortlauderdale.gov/clerk/LobbyistDocs/lobbyist_ordinance.pdf.

PROJECT 12210

SPECIAL CONDITIONS

01. PURPOSE

The City of Fort Lauderdale, Florida (City) is seeking bids from qualified bidders, hereinafter referred to as the Contractor, to provide construction services for the City's Public Works Department, in accordance with the terms, conditions, and specifications contained in this Invitation To Bid (ITB).

02. TRANSACTION FEES

The City of Fort Lauderdale uses BidSync (www.bidsync.com) to distribute and receive bids and proposals. There is no charge to vendors/contractors to register and participate in the solicitation process, nor will any fees be charged to the awarded contractor.

03. SUBMISSION OF BIDS

It is the sole responsibility of the Contractor to ensure that their bid is submitted electronically through BidSync at www.bidsync.com and that any bid security not submitted via BidSync reaches the City of Fort Lauderdale City Hall, Procurement Services Division, 6th floor, Room 619, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301 in a sealed envelope marked on the outside with the ITB solicitation number and Contractor's name, no later than the time and date specified in this solicitation. **PAPER BID SUBMITALS WILL NOT BE ACCEPTED. PLEASE SUBMIT YOUR BID RESPONSE ELECTRONICALLY.**

04. INFORMATION OR CLARIFICATION

For information concerning procedures for responding to this solicitation, contact **Procurement Specialist II**, at (954) 828-5239 or email at maureenl@fortlauderdale.gov. Such contact shall be for clarification purposes only.

For information concerning technical specifications please utilize the question/answer feature provided by BidSync at www.bidsync.com. Questions of a material nature must be received prior to the cut-off date specified in the solicitation. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. (See addendum section of BidSync Site). **Contractors please note**: No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Contractor has familiarized himself with the nature and extent of the work, and the equipment, materials, and labor required. The entire bid response must be

submitted in accordance with all specifications contained in this solicitation. The questions and answers submitted in BidSync shall become part of any contract that is created from this ITB.

05. CONTRACT TIME

5.1 The initial contract term shall commence upon date specified in the Notice To Proceed given by the City and shall expire **two (2)** years from that date. The City reserves the right to extend the contract for **two (2)** additional **one (1)** year terms, providing all terms, conditions and specifications remain the same, both parties agree to the extension, and such extension is approved by the City.

5.2 The Contractor recognizes that **TIME IS OF THE ESSENCE**. The Work on each Task Order shall commence immediately upon the Contractor's receipt of an executed Task Order.

5.3 The Contractor shall mobilize to the project site and begin construction activities within **N/A** calendar days of receipt of the executed Task Order or by the specific date noted within the Task Order (whichever applies).

5.4 The Work on each Task Order shall be substantially completed within the timeframe agreed upon and noted in each executed Task Order.

5.5 The Work on each Task Order shall be finally completed on or before the Final Completion Date and ready for final payment in accordance with Final Completion Date agreed upon and noted in each executed Task Order.

5.6 In the event services are scheduled to end because of the expiration of this contract, the Contractor shall continue the service upon the request of the City as authorized by the awarding authority. The extension period shall not extend for more than one hundred and twenty (120) days beyond the expiration date of the existing contract. The Contractor shall be compensated for the service at the rate in effect when this extension clause is invoked by the City. No new Task Orders will be assigned after the contract's expiration nor will any new work be performed after that date.

The City of Fort Lauderdale reserves the right to waive any informality in any bid and to reject any or all bids. The City of Fort Lauderdale reserves the right to reduce or delete any of the bid items.

At time of award of contract, the City reserves the right to set a maximum dollar limit that may be expended on this project. Contract quantities of any or all items may be increased, reduced, or eliminated to adjust the contract amount to coincide with the amount of work necessary or to bring the contract value to within the established limit. All quantities are estimated and the City reserves the right to increase, reduce, or eliminate the contract quantities in any amount.

The undersigned bidder affirms that he has or will obtain all equipment necessary to complete the work described, that he has or will obtain all required permits and licenses from the appropriate agencies, and that his firm is authorized to do business in the State of Florida.

06. BID SECURITY

A certified check, cashier's check, bank officer's check or bid bond for **FIVE** percent **(5%)** of the bid amount, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal.

07. REQUIRED LICENSES/CERTIFICATIONS

Contractor must possess the following licenses/certifications to be considered for award.

Certified general contractor license OR a certified underground utility and excavation contractor license issued by the Florida Department of Business and Professional Regulation. License number shall begin with the letter code "CG" or "CU, respectively.

Note: Contractor must have proper licensing and be able to provide evidence of same, if requested, at time of award.

08. SPECIFIC EXPERIENCE REQUIRED

The following expertise is required to be considered for this contract. Specific references attesting to this expertise must be submitted with bid.

Contractor shall have experience with repair/replacement of stormwater pipe, varying in size from 6-inch to 84-inch nominal diameter, via trenchless technology methods such as pipe bursting, Cure-in-Place-Pipe (CIPP) liner, Centrifugally Cast Concrete Pipe (CCCP) liner, directional bore, and closed circuit television inspection (CCTV) survey.

Contractor shall have a minimum of three years of continuous experience installing the product(s) proposed for this Project. Additionally, the contractor shall have successfully completed projects using the proposed product(s) on projects of the same size and installation conditions as this Project. Contractor shall provide experienced crew using the product(s) proposed and installed under the same installation conditions as this Project,

Bidder shall submit proof of construction experience for a minimum of three (3) projects of similar scope and scale (or larger) and shall, for each project listed, identify location; dates of construction; project name and overall scope; scope of work that was self-performed by Contractor; and client's name, address, telephone number and e-mail address.

NOTE: REFERENCES SHOULD NOT INCLUDE CITY OF FORT LAUDERDALE EMPLOYEES OR WORK PERFORMED FOR THE CITY. THE CITY IS INTERESTED IN

WORK EXPERIENCE AND REFERENCES OTHER THAN THE CITY OF FORT LAUDERDALE.

By signing this bid solicitation, contractor is affirming that this expertise will be provided for this contract at no additional charge.

09. BID ALLOWANCE

Allowance for permits: Payments will be made to the contractor based on the actual cost of permits upon submission of paid permit receipts. The City shall not pay for other costs related to obtaining or securing permits.

The amount indicated is intended to be sufficient to cover the entire project. If the City Permit fees exceed the allowance indicated, the City will reimburse the contractor the actual amount of City Permit Fees required for project completion.

Allowance	**$**
Permit Fee Allowance	$10,000
Environmental Testing Allowance	$10,000
Survey Fee Allowance	$10,000
Special Inspector Allowance	$10,000
Incidental Work Point Repair - determined by unforeseen conditions	$10,000
TOTAL	**$50,000**

Note: The City will add this allowance to your bid.

10. INSURANCE REQUIREMENTS *(See Article 10, Bonds and Insurance, of the Contract for details)*

10.1 General Information

Contractor shall provide and shall require all of its sub-contractors to provide, pay for, and maintain in force at all times during the term of the Agreement, such insurance, including Property Insurance (Builder's Risk), Commercial General Liability Insurance, Business Automobile Liability Insurance, Workers' Compensation Insurance, Employer's Liability Insurance, and Umbrella/Excess Liability, as stated below, as well as Professional Liability insurance in the amount of $1,000,000 for any Architectural and/or Engineering requirements associated with the fulfillment of the contract if required. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida. **A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.**

a) The City is required to be named as additional insured on the Commercial General Liability insurance policy. BINDERS ARE UNACCEPTABLE. The insurance coverage required shall include those classifications, as listed in standard liability insurance manuals, which most nearly reflect the operations of the Contractor. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for the work contemplated in this Agreement shall be deemed unacceptable, and shall be considered a breach of contract.

b) The Contractor shall provide the City an original Certificate of Insurance for policies required by Article 10. All certificates shall state that the City shall be given ten (10) days' notice prior to expiration or cancellation of the policy. The insurance provided shall be endorsed or amended to comply with this notice requirement. In the event that the insurer is unable to accommodate, it shall be the responsibility of the Contractor to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested and addressed to the Finance Department. Such policies shall: (1) name the insurance company or companies affording coverage acceptable to the City, (2) state the effective and expiration dates of the policies, (3) include special endorsements where necessary. Such policies provided under Article 10 shall not be affected by any other policy of insurance, which the City may carry in its own name.

c) Contractor shall, as a condition precedent of this Agreement, furnish to the City of Fort Lauderdale, c/o Project Manager, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301, Certificate(s) of Insurance upon execution of this Agreement, which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

10.2 Property Insurance (Builder's Risk): **- N/A**

10.3 Commercial General Liability:

a) Limits of Liability:

Bodily Injury and Property Damage - Combined Single Limit

Each Occurrence	$1,000,000
Project Aggregate	$1,000,000
General Aggregate	$2,000,000
Personal Injury	$1,000,000
Products/Completed Operations	$1,000,000

b) Endorsements Required:

City of Fort Lauderdale included as an Additional Insured
Broad Form Contractual Liability
Waiver of Subrogation
Premises/Operations
Products/Completed Operations

Independent Contractors
Owners and Contractors Protective Liability
Contractor's Pollution Liability – **N/A**

10.4 Business Automobile Liability

a) Limits of Liability:

Bodily Injury and Property Damage - Combined Single Limit
All Autos used in completing the contract
Including Hired, Borrowed or Non-Owned Autos
Any One Accident $1,000,000

b) Endorsements Required:

Waiver of Subrogation

10.5 Workers' Compensation and Employer's Liability Insurance

Limits:

Workers' Compensation – Per Florida Statute 440
Employers' Liability - $500,000

Any firm performing work on behalf of the City of Fort Lauderdale must provide Workers' Compensation insurance. Exceptions and exemptions can only be made if they are in accordance with Florida Law.

Contractor must be in compliance with all applicable State and Federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act or Jones Act.

10.6 Umbrella/Excess Liability: The Contractor shall provide umbrella/excess coverage with limits of no less than $2,000,000 excess of Commercial General Liability, Automobile Liability and Employer's Liability.

10.7 All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

The Contractor's insurance must be provided by an A.M. Best's "A-" rated or better insurance company authorized to issue insurance policies in the State of Florida, subject to approval by the City's Risk Manager. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for work contemplated in this project shall be deemed unacceptable, and shall be considered breach of contract.
NOTE: CITY PROJECT NUMBER AND NAME MUST APPEAR ON EACH CERTIFICATE.

A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements.

Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.

Compliance with the foregoing requirements shall not relieve the Contractor of their liability and obligation under this section or under any other section of this Agreement.

The Contractor shall be responsible for assuring that the insurance certificates required in conjunction with this Section remain in force for the duration of the Project. If insurance certificates are scheduled to expire during the contractual period, the Contractor shall be responsible for submitting new or renewed insurance certificates to the City at a minimum of thirty (30) calendar days in advance of such expiration. In the event that expired certificates are not replaced with new or renewed certificates that cover the contractual period, the City shall:

a) Suspend the Agreement until such time as the new or renewed certificates are received by the City.

b) The City may, at its sole discretion, terminate the Agreement for cause and seek damages from the Contractor in conjunction with the violation of the terms and conditions of the Agreement.

11. PERFORMANCE AND PAYMENT BOND: _____**100%**_____

Number of awards anticipated: _____**Approximately three**_____

12. CITY PROJECT MANAGER

The Project Manager is hereby designated by the City as **Elkin Diaz** whose address is **100 North Andrews, 4th Floor, Fort Lauderdale, FL 33301**, telephone number: **(954) 828-6539,** and email address is **ediaz@fortlauderdale.gov.** The Project Manager will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the Contract Documents in connection with completion of the Work in accordance with this Agreement.

13. LIQUIDATED DAMAGES *(See Article 16, Liquidated Damages, of the Contract for details)*

Upon failure of the Contractor to complete the Work of an executed task order within the agreed upon and approved time for said Task Order, the Contractor shall pay to the City the sum of **Five Hundred Dollars ($500.00)** for each and every calendar day that the completion of the Task Order is delayed beyond the time agreed upon for said Task Order, as fixed and agreed liquidated damages and not as a penalty, so long as the delay is caused by the Contractor. (See Article 16, Liquidated Damages Clause, of the Contract)

14. PAYMENT (*See Article 7, Payment, of the Contract for other details*)

The City has implemented a Purchasing Card (P-Card) Program utilizing both VISA and MASTERCARD networks. Purchases from this contract will be made utilizing the City's Purchasing Card. Contractor will receive payment from the purchasing card in the same manner as other credit card purchases. Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement the ability before the start of the contract term, or contract award by the City. The City reserves the right to revise this program as necessary.

15. WORK SCHEDULE (including overtime hours): Standard

Regular work hours: **8:00 am to 5:00 pm, Monday through Friday.**
City Inspector Hours: **8:00 am to 4:30 pm, Monday through Friday.**

Any inspection requested by the contractor outside those hours will be considered overtime to be paid by the Contractor.

16. INSPECTION OVERTIME COST: To be decided

CITY OF FORT LAUDERDALE
CONSTRUCTION AGREEMENT

THIS AGREEMENT made and entered into this _____ day of _____, 20__, by and between the City of Fort Lauderdale, a Florida municipal corporation (City) and _____, (Contractor), (parties);

WHEREAS, the City desires to retain a contractor for the Project as expressed in its Invitation to Bid No._____, Project No. _____, which was opened on _____; and,

WHEREAS, the Contractor has expressed its willingness and capability to perform the necessary work to accomplish the Project.

NOW, THEREFORE, the City and the Contractor, in consideration of the mutual covenants and conditions contained herein and for other good and valuable consideration, the receipt and sufficiency is hereby acknowledged, agree as follows:

ARTICLE 1 – DEFINITIONS

Whenever used in this Agreement or in other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural forms:

1.1 Agreement – This written Agreement between the City and the Contractor covering the work to be performed including other Contract Documents that are attached to or incorporated in the Agreement.

1.2 Application for Payment – The form accepted by the City which is to be used by the Contractor in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents.

1.3 Approve – The word approve is defined to mean review of the material, equipment or methods for general compliance with design concepts and with the information given in the Contract Documents. It does not imply a responsibility on the part of the City to verify in every detail conformance with plans and specifications.

1.4 Bid – The offer or Bid of the Contractor submitted on the prescribed form setting forth the total prices for the Work to be performed.

1.5 Bid Documents –This Agreement, advertisement for Invitation to Bids, the Instructions to Bidders, the Bid Form (with supplemental affidavits and agreements), the Contract Forms, General Conditions, the Supplementary Conditions, the Specifications, and the Plans, which documents all become an integral part of the Contract Documents.

SAMPLE CONSTRUCTION AGREEMENT

1.6 Certificate of Substantial Completion - Certificate provided by the City certifying that all Work, excluding the punch list items, has been completed, inspected, and accepted by the City.

1.7 Change Order - A change order is defined as a written order to a contractor approved by the city, authorizing a revision of an underlying agreement between the City and a contractor that is directly related to the original scope of work or an adjustment in the original contract price or the contract time directly related to the original scope of work, issued on or after the effective date of the contract.

1.8 City – The City of Fort Lauderdale, Florida including but not limited to its employees, agents, officials, representatives, contractors, subcontractors, volunteers, successors and assigns, with whom the Contractor has entered into the Agreement and for whom the Work is to be provided. The Project Manager, or designee, shall be the authorized agent for the City unless otherwise specified.

1.9 Contract Documents – The Contract Documents shall consist of this Agreement, Exhibits to this Agreement, Public Construction Bond, Performance Bond, Payment Bond and Certificates of Insurance, Notice of Award and Notice to Proceed, Task Orders, General Conditions as amended by the Special Conditions, Technical Specifications, Plans/Drawings, Addenda, Bid Form and supplement Affidavits and Agreements, all applicable provisions of State and Federal Law and any modification, including Change Orders or written amendments duly delivered after execution of Agreement, Invitation to Bid, Instructions to Bidders and Bid Bond, Contractor's response to the City's Invitation to Bid, Schedule of Completion, Schedule of Values, all amendments, modifications and supplements, change orders and work directive changes issued on or after the Effective Date of the Agreement, as well as any additional documents that are required to be submitted under the Agreement.

Permits on file with the City and or those permits to be obtained shall be considered directive in nature and will be considered a part of this Agreement. A copy of all permits shall be given to the City for inclusion in the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.

1.10 Contract Price – The monies payable to the Contractor by the City under the Contract Documents and in accordance with the line item unit prices listed in the Bid.

1.11 Contract Time – The number of calendar days stated in the Agreement for the completion of the Work. The dates on which the work shall be started and shall be completed as stated in the Notice to Proceed and each subsequent Task Order.

1.12 Contractor – The person, firm, company, or corporation with whom the City has entered into the Agreement, including but not limited to its employees, agents, representatives, contractors, subcontractors, their subcontractors and their other successors and assigns.

1.13 Day – A calendar day of twenty-four (24) hours ending at midnight.

1.14 Defective – When modifying the word "Work" refers to work that is unsatisfactory, faulty, or deficient, or does not conform to the Contract Documents or does not meet

SAMPLE CONSTRUCTION AGREEMENT

the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to the Project Manager's recommendation of final payment.

1.15 Effective Date of the Agreement – The effective date of the agreement shall be the date the Contract is executed by the parties. The Contractor shall provide all required payment and performance bonds and insurances to the City within ten (10) Calendar days following the City Commission approval. Upon verification of all bonds and insurances, the City will issue a written notice to proceed (NTP) to the Contractor. Contract time will commence on the date when the Notice to Proceed is issued. The Contractor shall commence the work immediately upon receipt of the Notice to Proceed. Failure of the contractor to proceed with the Work agreed upon within each executed Task Order will constitute nonperformance of the Contractor and would be grounds for termination of the contract per ARTICLE 17 of the Agreement.

1.16 Final Completion Date – The date the Task Order Work is completed, including completion of the final punch list, and delivered along with those items specified in the Contract Documents and is accepted by the City.

1.17 Hazardous Materials (HAZMAT) - Any solid, liquid, or gaseous material that is toxic, flammable, radioactive, corrosive, chemically reactive, or unstable upon prolonged storage in quantities that could pose a threat to life, property, or the environment defined in Section 101(14) of Comprehensive Environmental Response, Compensation and Liability Act of 1980 and in 40 CFR 300.6. Also defined by 49 CFR 171.8 as a substance or material designated by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated.

1.18 Hazardous Substance - As defined by Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act; any substance designated pursuant to Section 311(b) (2) (A) of the Clean Water Act; any element, compound, mixture, solution or substance designated pursuant to Section 102 identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act {but not including any waste listed under Section 307[a] of the Clean Water Act}; any hazardous air pollutant listed under Section 112 of the Clean Air Act; and any imminently hazardous chemical substance or mixture pursuant to Section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance in the first sentence of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas}.

1.19 Hazardous Waste - Those solid wastes designated by OSHA in accordance with 40 CFR 261 due to the properties of ignitability, corrosivity, reactivity, or toxicity. Any material that is subject to the Hazardous Waste Manifest requirements of the EPA specified in 40 CFR Part 262.

1.20 Holidays - Those designated non-work days as established by the City Commission of the City of Fort Lauderdale.

SAMPLE CONSTRUCTION AGREEMENT

1.21 Inspection – The term “inspection” and the act of inspecting as used in this Agreement is defined to mean the examination of construction to ensure that it conforms to the design concept expressed in the plans and specifications. This term shall not be construed to mean supervision, superintending and/or overseeing.

1.22 Notice of Award - The written notice by City to the Contractor stating that upon compliance by the Contractor with the conditions precedent enumerated therein, within the time specified that the City will sign and deliver this Agreement.

1.23 Notice to Proceed – A written notice given by the City to the Contractor fixing the date on which the Contract Time will commence to run and on which the Contract Time will end. Task Orders executed under this Contract will contain set timeframes in which the Task Order work shall be started and completed.

1.24 Plans - The drawings which show the character and scope of the work to be performed and which have been prepared or approved by the City and/or are referred to in the Contract Documents and/or Task Orders.

1.25 Premises (otherwise known as Site or Work Site) – means the land, buildings, facilities, etc. upon which the Work is to be performed.

1.26 Project – The total construction of the Work to be provided as defined in the Contract Documents and each executed Task Order.

1.27 Project Manager - The employee of the City, or other designated individual who is herein referred to as the Project Manager, will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the contract Documents in connection with completion of the Work in accordance with this Agreement.

1.28 Punch List - The City's list of Work yet to be done or be corrected by the Contractor, before the Final Completion date can be determined by the City.

1.29 Record Documents - A complete set of all specifications, drawings, addenda, modifications, shop drawings, submittals and samples annotated to show all changes made during the construction process.

1.30 Record Drawings or "As-Builts" - A set of drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor. These documents shall be signed and sealed by a Professional Engineer or a Professional Land Surveyor licensed in the State of Florida and employed by the Contractor at no cost to the City.

1.31 Substantially Completed Date – The Contractor shall submit a written request to the City for an inspection to determine if the Work is substantially complete. If, at the time of inspection, it is determined the project is substantially complete, the City will issue a letter of Substantial Completion along with a punch list of incomplete or deficient items to be completed prior to requesting a Final Completion inspection.

SAMPLE CONSTRUCTION AGREEMENT

1.32 Task Order – A written agreement between the City and Contractor defining the particular scope of work to be performed under this Contract. When necessary, plans, permits and specifications may be provided by the City to clarify the requirements of the Task Order work. Each Task Order will contain a timeframe in which the work shall be completed in order for the Contractor to avoid being subjected to liquidated damages.

1.33 Work – The entire completed delivered product or the various separately identifiable parts thereof required to be furnished under the Contract Documents and/or Task Order. Work is the result of performing services, furnishing labor and furnishing and incorporating material and equipment into the product, all as required by the Contract Documents.

ARTICLE 2 – SCOPE OF WORK

2.1 The Contractor shall complete all work as specified or indicated in the Contract Documents. The Project for which the Work under the Contract Documents may be the whole or only part is generally described as follows:

STORMWATER LINING, CCTV AND TRENCHLESS TECHNOLOGIES
ITB 673-11892 PROJECT 12210

2.2 All Work for the Project shall be constructed in accordance with the Drawings and Specifications. The Work generally involves:

PROJECT DESCRIPTION

This project is located throughout the City of Fort Lauderdale and the City's utility service area. Labor will commonly be performed on City right-of-ways, residential streets, as well as County and State roadways as needed and defined by individual work Task Orders.

The work to be accomplished under this contract is primarily for the rehabilitation of existing stormwater pipes, varying in size from 6 inch to 84 inch in diameter, and drainage structures (catch basins and manholes) on an as needed basis by using various methods of rehabilitative technologies such as pipe bursting, Cure-in-Place-Pipe (CIPP) liner, Centrifugally Cast Concrete Pipe (CCCP) liner, and others.

The work also includes pre-work and post-work closed circuit television inspection (CCTV) survey, flow monitoring, flow bypass, traffic control, site restoration, replacement of defective piping and drainage structures, resulting in a complete and satisfactory rehabilitation of the stormwater drainage system as required and authorized by the City of Fort Lauderdale.

2.3 Within ten (10) days of a Notice to Proceed of the start date noted on each Task Order, the Contractor shall submit a Construction Schedule, Schedule of Values and a listing of any subcontractors that will be utilized by the Contractor. The general sequence of the Work shall be submitted by the Contractor and approved by the City before any work commences. The City reserves the right to issue construction directives necessary to facilitate the Work or to minimize any conflict with current and on-going operations.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 3 – PROJECT MANAGER

3.1 The Project Manager is hereby designated by the City as **Elkin Diaz,** whose address is 100 N. Andrews Avenue, 4th Floor, Fort Lauderdale, FL 33301, telephone number: **(954) 828 - 6539**, and email address is ediaz@fortlauderdale.gov. The Project Manager will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the Contract Documents in connection with completion of the Work in accordance with this Agreement.

ARTICLE 4 – CONTRACT DOCUMENTS

The Contract Documents which comprise the entire Agreement between the City and Contractor are attached to this Agreement, are made a part hereof and consist of the following:

4.1 This Agreement.

4.2 Exhibits to this Agreement [Plans (sheets [ ] to [ ] inclusive)].

4.3 Public Construction Bond, Performance Bond, Payment Bond and Certificates of Insurance.

4.4 Notice of Award and Notice to Proceed.

4.5 General Conditions as amended by the Special Conditions.

4.6 Technical Specifications.

4.7 Plans/Drawings.

4.8 Addenda number_____ through _____, inclusive.

4.9 Bid Form and supplement Affidavits and Agreements.

4.10 All applicable provisions of State and Federal Law and any modification, including Change Orders or written amendments duly delivered after execution of Agreement.

4.11 Invitation to Bid No., _____, Instructions to Bidders and Bid Bond.

4.12 Contractor's response to the City's Invitation to Bid No., _____, dated _____.

4.13 Schedule of Completion and Schedule of Values.

4.14 All amendments, modifications, supplements, Task Orders, change orders, and work directive changes, issued on or after the Effective Date of the Agreement.

4.15 Any Additional documents that are required to be submitted under the Agreement.

SAMPLE CONSTRUCTION AGREEMENT

4.16 Permits on file with the City and or those permits to be obtained shall be considered directive in nature and will be considered a part of this Agreement. A copy of all permits shall be given to the City for inclusion in the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.

In the event of any conflict between the documents or any ambiguity or missing specification or instruction, the following priority is established:

a. Specific written direction from the City Manager (or designee)

b. Approved change orders, addenda or amendments.

c. Specifications (quality) and Drawings (location and quantity).

d. Supplemental conditions or special terms.

e. General Terms and Conditions.

f. This Agreement dated _____ and any attachments.

g. Invitation to Bid No., _____, and the specifications prepared by the City.

h. Contractor's response to the City's Invitation to Bid No., _____, dated _____.

i. Schedule of Values.

j. Schedule of Completion.

If during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, Contractor shall so report to the Project Manager, in writing, within five (5) calendar days, and before proceeding with the Work affected shall obtain a written interpretation or clarification from the City.

Any Work that may reasonably be inferred from the specifications or plans as being required to produce the intended result shall be supplied whether or not it is specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials, or equipment, such works shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals or codes of any technical society, organization or associations, or to the code of any governmental authority whether such reference be specific or implied, shall mean the latest standard specification, manual or code in effect as of the Effective Date of this Agreement, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of the City, the Contractor, or any of their agents or employees from those set forth in the Contract Documents.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 5 – CONTRACT TIME

5.1 The initial contract term shall commence upon the date of award by the City and shall expire **two (2)** years from that date. The City reserves the right to extend the contract for **two (2)** additional **one (1)** year terms, providing all terms conditions and specifications remain the same, both parties agree to the extension, and such extension is approved by the City.

5.2 The Contractor recognizes that **TIME IS OF THE ESSENCE**. The Work on each Task Order shall commence immediately upon the Contractor's receipt of an executed Task Order.

5.3 The Contractor shall mobilize to the project site and begin construction activities within **N/A** calendar days of receipt of the executed Task Order or by the specific date noted within the Task Order (whichever applies).

5.4 The Work on each Task Order shall be substantially completed within the timeframe agreed upon and noted in each executed Task Order.

5.5 The Work on each Task Order shall be finally completed on or before the Final Completion Date and ready for final payment in accordance with Final Completion Date agreed upon and noted in each executed Task Order.

5.6 In the event services are scheduled to end because of the expiration of this contract, the Contractor shall continue the service upon the request of the City as authorized by the awarding authority. The extension period shall not extend for more than one hundred and twenty (120) days beyond the expiration date of the existing contract. The Contractor shall be compensated for the service at the rate in effect when this extension clause is invoked by the City. No new Task Orders will be assigned after the contract's expiration nor will any new work be performed after that date.

ARTICLE 6 – CONTRACT PRICE

6.1 City shall pay Contractor for performance of the Work in accordance with Article 7 based on the value of the executed Task Orders issued for this Contract.

6.2 The parties expressly agree that the Contract Price is a unit price contract, in accordance with those line item unit prices contained in the Contractor's ITB response and incorporated by reference herein. The quantities of work in the Proposal are a rough approximation only. The total quantities of work to be included in this Contract and actually performed may vary widely depending upon the work that will be authorized by the City through Task Orders, during the period of this Contract.

6.3 The Contract Price constitutes the total compensation payable to Contractor for the cumulative value of each executed Task Order. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract price.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 7 – PAYMENT PROCEDURES

7.1 Contractor shall submit Applications for Payment, for each executed Task Order, in accordance with the Contract Documents. Applications for Payment will be processed by the City as provided for in the General Conditions.

7.2 Progress Payments. City shall make progress payments on account of the Contract Price on the basis of Contractor's executed Task Order and corresponding Application for Payment, which shall be submitted by the Contractor between the first (1st) and the tenth (10th) day after the end of each calendar month for which payment is requested, or upon completion of the work of the executed Task Order. All progress payments will be made on the basis of the progress of the Work completed on the executed Task Order.

7.3 Prior to Final Completion of each Task Order, progress payments will be made in an amount equal to ninety percent (90%) of the value of Work completed less in each case the aggregate of payments previously made.

7.4 Final Payment: Upon final completion of the Work under each Task Order, in accordance with the General Conditions, as may be supplemented, the City shall pay Contractor an amount sufficient to increase total payments to one-hundred percent (100%) of the Contract Price.

7.5 The City shall make payment to the Contractor in accordance with the Florida Prompt Payment Act, Section 218.70, Florida Statutes.

7.6 The City shall make payment to the Contractor through utilization of the City's P-Card Program. The City has implemented a Purchasing Card Program using the VISA network. Purchases made from this Contract shall be made using the City's Purchasing Card. Contractor will receive payment from the purchasing card in the same manner as other VISA purchases. Accordingly, bidders must presently have the ability to accept VISA or take whatever steps necessary to implement this ability before the start of the contract term, or contract award by the City. The City reserves the right to revise this program in conjunction with implementation of an on-line procurement system. All costs associated with the implementation of this purchasing program shall be borne by the Contractor.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

In order to induce the City to enter into this Agreement, and prior to agreeing to and execution of each Task Order under this Contract, Contractor makes the following representations upon which the City has relied:

8.1 Contractor is qualified in the field of public construction and in particular to perform the Work and services set forth in this Agreement.

8.2 Contractor has visited the Work Site, conducted all necessary extensive tests, examinations and investigations and represents and warrants a thorough familiarization with the nature and extent of each Task Order and associated Contract Documents, the Work, locality, soil conditions, moisture conditions and all year-round

SAMPLE CONSTRUCTION AGREEMENT

local weather and climate conditions (past and present), and, in reliance on such tests, examination and investigations conducted by Contractor and the Contractor's experts, has determined that no conditions exist that would in any manner affect the Proposed Price and that the project can be completed for the Proposed Price submitted within the Contract Time as defined in each Task Order. Furthermore, Contractor warrants and confirms that he is totally familiar with, understands and obligates Contractor to comply with all federal, state and local laws, ordinances, rules, regulations and all market conditions that affect or may affect the cost and price of materials and labor needed to fulfill all provisions of this Agreement or that in any manner may affect cost, progress or performance of the Work.

8.3 The Contractor has satisfied itself as to the nature and location of the Work under each Task Order, the general and local conditions of the Project, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, and roads, the conformation and conditions at the ground based on City provided reports, the type of equipment and facilities needed preliminary to and during the prosecution of the Task Order and all other matters which can in any way affect the Work, schedule, or the cost thereof under the Task Order and associated Contract Documents.

8.4 The Contractor has also studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Works, and will determine that no conditions exist that would in any manner affect the Proposed Price and that the Task Order Work can be completed for the Proposed Price submitted and within the timeframe agreed upon within each Task Order.

8.5 Contractor has made or cause to be made examinations, investigations, tests and studies of such reports and related data in addition to those referred to in Paragraphs 8.2, 8.3 and 8.4 above as it deems necessary for the performance of the Work under each Task Order at the Contract Prices, within the Contract Time of the specified Task Order and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are, or will be, required by Contractor for such purposes.

8.6 Contractor has correlated the results of all such observations, examinations, investigations, tests, reports and data related to each Task Order with the terms and conditions of the Contract Documents.

8.7 Contractor has given City written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents related to each Task Order and the written resolution by City is acceptable to the Contractor.

SAMPLE CONSTRUCTION AGREEMENT

8.8 Labor

8.8.1 The Contractor shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents for each Task Order. The Contractor shall at all times maintain good discipline and order at the site.

8.8.2 The Contractor shall, at all times, have a competent superintendent, capable of reading and thoroughly understanding the drawings and specifications, as the Contractor's agent on the Work, who shall, as the Contractor's agent, supervise, direct and otherwise conduct the Work under each Task Order.

8.8.3 The Contractor shall designate the superintendent on the job to the City, in writing, immediately after receipt of each Task Order. The Contractor understands and agrees that the superintendent's physical presence on the job site is indispensable to the successful completion of the Work. If the superintendent is frequently absent from the job site, the Project Manager may deliver written notice to the Contractor to stop work or terminate the Contract in accordance with Article 17.

8.8.4 A certified "competent person" shall be assigned to the job site for each Task Order. The Contractor shall assign personnel to the job site that have successfully completed training programs related to trench safety, confined space work, and maintenance of traffic (MOT). Personnel certified by the International Municipal Signal Associations with Florida Department of Transportation qualifications are required relative to MOT. Any other certifications that may be required by applicable permitting agencies for the Work assigned under each Task Order shall also be complied with by the Contractor. Failure to pursue the Work with the properly certified supervisory staff may result in a notice to stop work on a Task Order or termination of the Contract in accordance with Article 17.

8.9 Materials:

8.9.1 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 Work under each Task Order.

8.9.2 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. Suppliers shall be selected and paid by the Contractor; the City reserves the right to approve all suppliers and materials.

8.10 Work Hours: Except in connection with the safety or protection of persons, or the Work, or property at the site or adjacent thereto, and except as otherwise indicated in the Supplementary Conditions, all work at the site shall be performed during regular working hours between 7 a.m. and 6:00 p.m., Monday through Friday.

SAMPLE CONSTRUCTION AGREEMENT

The Contractor will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday (designated by the City of Fort Lauderdale) without the Project Manager's written consent at least seventy two (72) hours in advance of starting such work. If the Project Manager permits overtime work, the Contractor shall pay for the additional charges to the City with respect to such overtime work. Such additional charges shall be a subsidiary obligation of the Contractor and no extra payment shall be made to the Contractor for overtime work. It shall be noted that the City's Inspector work hours are from 8:00 AM to 4:30 PM and any Work requiring inspection oversight being performed outside of this timeframe shall be paid for by the Contractor as Inspector overtime. The cost to the Contractor to reimburse the City for overtime inspection is established at direct-labor and overtime costs for each person or inspector required. Incidental overtime costs for engineering, testing and other related services will also be charged to the Contractor at the actual rate accrued.

8.11 Patent Fee and Royalties: The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work, or any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. The Contractor hereby expressly binds himself or itself to indemnify and save harmless the City from all such claims and fees and from any and all suits and action of every name and description that may be brought against City on account of any such claims, fees, royalties, or costs for any such invention or patent, and from any and all suits or actions that may be brought against said City for the infringement of any and all patents or patent rights claimed by any person, firm corporation or other entity.

8.12 Permits: The Contractor shall obtain and pay for all permits and licenses. There shall be no allowance for Contractor markup, overhead or profit for permits and licenses. The Contractor shall pay all government charges which are applicable at the time of opening of proposals. It shall be the responsibility of the Contractor to secure and pay for all necessary licenses and permits of a temporary nature necessary for the prosecution of Work.

8.13 Law and Regulations: The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the Contractor observes that the specifications or plans are in conflict, the Contractor shall give the Project Manager prompt written notice thereof within five (5) calendar days. If the Contractor performs any work knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to the Project Manager, the Contractor shall bear all costs arising therefrom; however, it shall not be the Contractor's primary responsibility to make certain that the specifications and plans are in accordance with such laws, ordinances, rules and regulations.

8.14 Taxes: The Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the laws of the City of Fort Lauderdale, County of Broward, State of Florida.

8.15 Contractor Use of Premises: The Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits and/or the requirements of the Contract Documents, and

SAMPLE CONSTRUCTION AGREEMENT

shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

The Contractor shall not enter upon private property for any purpose without first securing the permission of the property owner in writing and furnishing the Project Manager with a copy of said permission. This requirement will be strictly enforced, particularly with regard to such vacant properties as may be utilized for storage or staging by the Contractor. The Contractor shall conduct its work in such a manner as to avoid damage to adjacent private or public property. Any damage to existing structures of work of any kind, including permanent reference markers or property corner markers, or the interruption of a utility service, shall be repaired or restored promptly at no expense to the City or property owner.

The Contractor will preserve and protect all existing vegetation such as trees, shrubs and grass on or adjacent to the site which does not reasonably interfere with the construction, as determined by the Project Manager. The Contractor will be responsible for repairing or replacing any trees, shrubs, lawns and landscaping that may be damaged due to careless operation of equipment, stockpiling of materials, tracking of grass by equipment or other construction activity. The Contractor will be liable for, or will be required to replace or restore at no expense to the City all vegetation not protected or preserved as may be required that is destroyed or damaged.

During the progress of the Work, the Contractor shall keep the premises free from accumulation of waste materials, rubbish and 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 at no cost to the City.

8.16 Project Coordination: The Contractor shall provide for the complete coordination of the construction effort. This shall include, but not necessarily be limited to, coordination of the following:

8.16.1 Flow of material and equipment from suppliers.
8.16.2 The interrelated work with affected utility companies.
8.16.3 The interrelated work with the City where tie-ins to existing facilities are required.
8.16.4 The effort of independent testing agencies.
8.16.5 Notice to affected property owners as may be directed by the Project Manager.
8.16.6 Coordination with and scheduling of all required inspections from all permitting agencies.

8.17 Project Record Documents and As-Builts (Record Drawings): Contractor shall be responsible for maintaining up to date redline as-built drawings, on site, at all times during construction. All as-built information shall be surveyed and verified by a professional land surveyor registered in the State of Florida. Contractor shall provide

SAMPLE CONSTRUCTION AGREEMENT

the City with a minimum of three (3) sets of signed and sealed record drawings (Final As-builts) and a CD of the electronic drawing files created in AutoCAD 2014 or later. All costs associated with survey work required for construction layout and as-built preparation shall be the responsibility of the Contractor.

8.18 Safety and Protection:

8.18.1 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:

8.18.1.1 All employees working on the project and other persons who may be affected thereby.

8.18.1.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site.

8.18.1.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

8.18.2 The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify owners of adjacent property and utilities when execution of the Work may affect them at least seventy two (72) hours in advance (unless otherwise required). All damage, injury or loss to any property caused, directly or indirectly, in whole or in part by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor. The Contractor's duties and responsibilities for safety and protection of the Work shall continue until such time as all the Work is completed and accepted by the City.

8.19 Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the City, is obligated to act to prevent threatened damage, injury or loss. The Contractor shall give the Project Manager prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby.

8.20 Risk of Loss: The risk of loss, injury or destruction shall be on the Contractor until acceptance of the Work by the City. Title to the Work shall pass to the City upon acceptance of the Work by the City.

SAMPLE CONSTRUCTION AGREEMENT

8..21 No Damages for Delay: For other and additional good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Contractor covenants and agrees that in the event of any delay of construction or for any other reason or allegation or claim, and notwithstanding the reason of the delay, reason, claim or allegation or who caused them or the construction delay or whether they were caused by the City, that there will be no entitlement to Contractor to or for any direct or indirect financial damages or losses for extended corporate overhead impact, extended project overhead impacts, project support services, mobilization or demobilization or by whatever other label or legal concept or theory and types of names or labels or basis such claims may have, or any business damages or losses of whatever type or nature, and Contractor hereby waives any right to make any such claim or claims. This provision will have application and effect when construction delays are anticipated and agreed upon by both the City and the Contractor.

8.22 No Liens: If any Subcontractor, supplier, laborer, or materialmen of Contractor or any other person directly or indirectly acting for or through Contractor files or attempts to file a mechanic's or construction lien against the real property on which the work is performed or any part or against any personal property or improvements or claim against any monies due or to become due from the City to Contractor or from Contractor to a Subcontractor, for or on account of any work, labor, services, material, equipment, or other items furnished in connection with the Work or any Change Order, Contractor agrees to satisfy, remove, or discharge such lien or claim at its own expense by bond, payment, or otherwise within twenty (20) days of the filing or from receipt of written notice from the City.

Additionally, until such time as such lien or claim is satisfied, removed or discharged by Contractor, all monies due to Contractor, or that become due to Contractor before the lien or claim is satisfied, removed or otherwise discharged, shall be held by City as security for the satisfaction, removal and discharge of such lien and any expense that may be incurred while obtaining such. If Contractor shall fail to do so, City shall have the right, in addition to all other rights and remedies provided by this Agreement or by law, to satisfy, remove, or discharge such lien or claim by whatever means City chooses at the entire and sole cost and expense of Contractor which costs and expenses shall, without limitation, include attorney's fees, litigation costs, fees and expenses and all court costs and assessments.

8.23 Weather Emergencies: Upon issuance of a Hurricane Watch by the National Weather Service, the Contractor shall submit to the City a plan to secure the work area in the event a Hurricane Warning is issued. The plan shall detail how the Contractor will secure the Premises, equipment and materials in a manner as to prevent damage to the Work and prevent materials and equipment from becoming a hazard to persons and property on and around the Premises. The plan shall include a time schedule required to accomplish the hurricane preparations and a list of emergency contacts that will be available and in the City before, during and immediately after the storm.

Upon issuance of a Hurricane Warning by the National Weather Service, if the Contractor has not already done so, the Contractor shall implement its hurricane preparedness plan. Cost of development and implementation of the hurricane

SAMPLE CONSTRUCTION AGREEMENT

preparedness plan shall be considered as incidental to construction. Cost of any clean up and rework required after the storm will be considered normal construction risk within Florida and shall not entitle the Contractor to any additional compensation. Contractor shall be entitled to request an extension in time for completion of the Work, in accordance with the provisions of Article 15 of this Agreement, equal to the time it is shut down for implementation of the preparedness plan, the duration of the storm and a reasonable period to restore the Premises.

8.24 Force Majeure: No Party shall hold the other responsible for damages or for delays in performance caused by force majeure, acts of God, or other acts or circumstances beyond the control of the other party or that could not have been reasonably foreseen and prevented. For this purposes, such acts or circumstances shall include, but not be limited to weather conditions affecting performance, floods, epidemics, war, riots, strikes, lockouts, or other industrial disturbances, or protest demonstrations. Should such acts or circumstances occur, the parties shall use their best efforts to overcome the difficulties arising therefrom and to resume the Work as soon as reasonably possible with the normal pursuit of the Work.

Inclement weather, continuous rain for less than three (3) days or the acts or omissions of subcontractors, third-party contractors, materialmen, suppliers, or their subcontractors, shall not be considered acts of force majeure.

No Party shall be liable for its failure to carry out its obligations under the Agreement during a period when such Party is rendered unable by force majeure to carry out its obligation, but the obligation of the Party or Parties relying on such force majeure shall be suspended only during the continuance of the inability and for no longer period than the unexpected or uncontrollable event.

The Contractor further agrees and stipulates, that its right to excuse its failure to perform by reason of force majeure shall be conditioned upon giving written notice of its assertion that a Force Majeure delay has commenced within 96 hours after such an occurrence. The CONTRACTOR shall use its reasonable efforts to minimize such delays. The CONTRACTOR shall promptly provide an estimate of the anticipated additional time required to complete the Project.

8.25 Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assisted Contracts: The recipient shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE program or the requirements of 49 CFR part 26. The recipient shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. The recipient's DBE program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the recipient of its failure to carry out its approved program, the Department may impose sanctions as provided for under Part 26 and may, in appropriate cases, refer the matter for enforcement under 18

SAMPLE CONSTRUCTION AGREEMENT

U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 *et seq.*).

Additionally, the contractor assures that it, the sub recipient or its subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate. (This additional language must be included in each subcontract the prime contractor signs with a subcontractor.)

ARTICLE 9 – CITY'S RESPONSIBILITIES

9.1 The City shall furnish the data required of the City under the Contract Documents promptly and shall make payments to the Contractor promptly after they are due as provided in Article 7.

9.2 The City's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in the Contract Documents.

9.3 Technical Clarifications and Interpretations:

9.3.1 The City shall issue, with reasonable promptness, such written clarifications or interpretations of the Contract Documents as it may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. Should the Contractor fail to request interpretation of questionable items in the Contract Documents, the City shall not entertain any excuse for failure to execute the Work in a satisfactory manner.

9.3.2 The City shall interpret and decide matters concerning performance under the requirements of the Contract Documents, and shall make decisions on all claims, disputes or other matters in question. Written notice of each claim, dispute or other matter will be delivered by claimant to the other Party but in no event later than five (5) days after the occurrence of event, and written supporting date will be submitted to the other Party within five (5) days after such occurrence. All written decisions of the City on any claim or dispute will be final and binding.

9.4 The Contractor shall perform all Work to the reasonable satisfaction of the City in accordance with the Contract Documents. In cases of disagreement or ambiguity, the City shall decide all questions, difficulties, and disputes of whatever nature, which may arise under or by reason of this Agreement or the quality, amount and value of the Work, and the City's decisions on all claims, questions and determination are final.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 10 – BONDS AND INSURANCE

10.1 Public Construction and Other Bonds: The Contractor shall furnish Public Construction or Performance and Payment Bonds ("Bond"), in an amount equal to 100% of the value of each Task Order issued as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. These Bonds shall remain in effect until at least one (1) year after the date of final payment, except as otherwise provided by law. All Bonds shall be furnished and provided by the surety and shall be in substantially the same form as prescribed by the Contract Documents and be executed by such sureties as (i) are licensed to conduct business in the State of Florida, and (ii) are named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department and (iii) otherwise meet the requirements set forth herein that apply to sureties. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

10.1.1 Performance Bond: A Corporate Surety Bond legally issued, meeting the approval of, and running to the City in an amount not less than the Contract Price of such improvements, conditioned that the Contractor shall maintain and make all repairs to the improvements constructed by the Contractor at their own expense and free of charge to the City, for the period of one (1) year after the date of acceptance of the Work within such period by reason of any imperfection of the material used or by reason of any defective workmanship, or any improper, imperfect or defective preparation of the base upon which any such improvement shall be laid.

The Contractor shall execute and record in the public records of Broward County, Florida, a payment and performance bond in an amount at least equal to the Contract Price with a surety insurer authorized to do business in the State of Florida as surety, ("Bond"), in accordance with Section 255.05, Florida Statutes (2014), as may be amended or revised, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents.

10.2 Disqualification of Surety: If the Surety on any Bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Florida or it ceases to meet the requirements of clauses (i) and (ii) of Paragraph 10.1, the Contractor shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to the City.

10.3 Insurance

10.3.1 Contractor shall provide and shall require all of its sub-contractors to provide, pay for, and maintain in force at all times during the term of the Agreement, such insurance, including Property Insurance (Builder's Risk), Commercial General Liability Insurance, Business Automobile Liability Insurance, Workers' Compensation Insurance, Employer's Liability Insurance, and Umbrella/Excess Liability, as stated below, as well as Professional Liability insurance in the amount of $1,000,000 per claim for

SAMPLE CONSTRUCTION AGREEMENT

any Architectural and or Engineering requirements associated with the fulfillment of any Task Order if required. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida. ***A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.***

A. The City is required to be named as additional insured on the Commercial General Liability insurance policy. BINDERS ARE UNACCEPTABLE. The insurance coverage required shall include those classifications, as listed in standard liability insurance manuals, which most nearly reflect the operations of the Contractor. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for the work contemplated in this Agreement shall be deemed unacceptable, and shall be considered a breach of contract.

B. The Contractor shall provide the City an original Certificate of Insurance for policies required by Article 10. All certificates shall state that the City shall be given ten (10) days' notice prior to expiration or cancellation of the policy. The insurance provided shall be endorsed or amended to comply with this notice requirement. In the event that the insurer is unable to accommodate, it shall be the responsibility of the Contractor to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested and addressed to the Finance Department. Such policies shall: (1) name the insurance company or companies affording coverage acceptable to the City, (2) state the effective and expiration dates of the policies, (3) include special endorsements where necessary. Such policies provided under Article 10 shall not be affected by any other policy of insurance, which the City may carry in its own name.

C. Contractor shall, as a condition precedent of this Agreement, furnish to the City of Fort Lauderdale, c/o Project Manager, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301, Certificate(s) of Insurance upon execution of this Agreement, which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

10.3.2 Property Insurance (Builder's Risk): **- N/A**

SAMPLE CONSTRUCTION AGREEMENT

10.3.3 Commercial General Liability

A. Limits of Liability:
Bodily Injury and Property Damage - Combined Single Limit

Each Occurrence	$1,000,000
Project Aggregate	$1,000,000
General Aggregate	$2,000,000
Personal Injury	$1,000,000
Products/Completed Operations	$1,000,000

B. Endorsements Required:
City of Fort Lauderdale included as an Additional Insured
Broad Form Contractual Liability
Waiver of Subrogation
Premises/Operations
Products/Completed Operations
Independent Contractors
Owners and Contractors Protective Liability
Contractor's Pollution Liability – **N/A**

10.3.4 Business Automobile Liability

A. Limits of Liability:
Bodily Injury and Property Damage - Combined Single Limit
All Autos used in completing the contract
Including Hired, Borrowed or Non-Owned Autos
Any One Accident $1,000,000

B. Endorsements Required:
Waiver of Subrogation

10.3.5 Workers' Compensation and Employer's Liability Insurance

Limits: Workers' Compensation – Per Florida Statute 440
Employers' Liability - $500,000

Any firm performing work on behalf of the City of Fort Lauderdale must provide Workers' Compensation insurance. Exceptions and exemptions can only be made if they are in accordance with Florida Law.

Contractor must be in compliance with all applicable State and Federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act or Jones Act.

10.3.6 Umbrella/Excess Liability: The Contractor shall provide umbrella/excess coverage with limits of no less than $2,000,000 excess of Commercial General Liability, Automobile Liability and Employer's Liability.

SAMPLE CONSTRUCTION AGREEMENT

10.3.7 All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

The Contractor's insurance must be provided by an A.M. Best's "A-" rated or better insurance company authorized to issue insurance policies in the State of Florida, subject to approval by the City's Risk Manager. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for work contemplated in this project shall be deemed unacceptable, and shall be considered breach of contract.
NOTE: CITY PROJECT NUMBER MUST APPEAR ON EACH CERTIFICATE.

A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.

Compliance with the foregoing requirements shall not relieve the Contractor of their liability and obligation under this section or under any other section of this Agreement.

The Contractor shall be responsible for assuring that the insurance certificates required in conjunction with this Section remain in force for the duration of the Project. If insurance certificates are scheduled to expire during the contractual period, the Contractor shall be responsible for submitting new or renewed insurance certificates to the City at a minimum of thirty (30) calendar days in advance of such expiration. In the event that expired certificates are not replaced with new or renewed certificates that cover the contractual period, the City shall:

A. Suspend the Agreement until such time as the new or renewed certificates are received by the City.

B. The City may, at its sole discretion, terminate the Agreement for cause and seek damages from the Contractor in conjunction with the violation of the terms and conditions of the Agreement.

ARTICLE 11- WARRANTY AND GUARANTEE, TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

11.1 Warranty: The Contractor warrants and guarantees to the City 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.

11.1.1 Warranty of Title: The Contractor warrants to the City that it possesses good, clear and marketable title to all equipment and materials provided and that there

SAMPLE CONSTRUCTION AGREEMENT

are no pending liens, claims or encumbrances against the equipment and materials.

11.1.2 Warranty of Specifications: The Contractor warrants that all equipment, materials and workmanship furnished, whether furnished by the Contractor, its subcontractors or suppliers, will comply with the specifications, drawings and other descriptions supplied or adopted and that all services will be performed in a workmanlike manner.

11.1.3 Warranty of Merchantability: The Contractor warrants that any and all equipment to be supplied pursuant to this Agreement is merchantable, free from defects, whether patent or latent in material or workmanship, and fit for the ordinary purposes for which it is intended.

11.2 Tests and Inspections: Contractor shall retain the services of an independent, certified, testing lab to perform all testing as required by the specifications, Contract drawings, and any applicable permitting agency. Contractor shall provide evidence of certification to the City before the work and testing is done. Testing results shall be submitted to the Engineer for review and approval at the time the results are provided to the Contractor. The Contractor shall give the Project Manager and City Inspector a minimum of twenty-four (24) hours' advanced notice of readiness of the Work for all required inspections, tests, or approvals and shall notify all applicable permitting agencies in a timely manner based on requirements set forth in the permit documents.

11.2.1 Neither observations by the Project Manager nor inspections, tests or approvals by others shall relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents.

11.3 Uncovering Work: If any work that is to be inspected, tested or approved is covered without approval or consent of the Project Manager, it must, if requested by the Project Manager, be uncovered for observation and/or testing. Such uncovering and replacement shall be at the Contractor's sole expense unless the Contractor has given the Project Manager timely notice of the Contractor's intention to cover such Work and the Project Manager has not acted with reasonable promptness in response to such notice.

11.3.1 If the Project Manager considers it necessary or advisable that Work covered in accordance with Section 11.2 be observed by the City or inspected or tested by others, the Contractor at the City's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Project Manager 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, and an appropriate deductive Change Order shall be issued. 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

SAMPLE CONSTRUCTION AGREEMENT

uncovering, exposure, observation, inspection testing and reconstruction if he makes a claim therefore as provided in Articles 14 and 15.

11.4 City May Stop the Work: If the Work is defective, or the Contractor fails to supply sufficient skilled supervisory personnel or workmen or suitable materials or equipment or the work area is deemed unsafe, 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. The City will not award any increase in Contract Price or Contract Time if the Work is stopped due to the circumstances described herein.

11.5 Correction or Removal of Defective Work Before Final Payment: If required by the Project Manager, the Contractor shall promptly, without cost to the City and as Specified by the Project Manager, either correct any defective Work, whether or not fabricated, installed or completed, or if the Work has been rejected by the City remove it from the site and replace it with non-defective Work.

11.6 One Year Correction Period After Final Payment: If, within one (1) year after the date of final acceptance of work on each Task Order, or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any work is found to be defective, the Contractor shall promptly, without cost to the City and in accordance with the City's written instructions, either correct such defective Work, or, if it has been rejected by the City, remove it from the site and replace it with non-defective 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 City may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs for such removal and replacement, including compensation for additional professional services, shall be paid by the Contractor.

11.7 Acceptance of Defective Work, Deductions: If, instead of requiring correction or removal and replacement of defective Work, the City, at the City's sole option, prefers to accept it, the City may do so. In such a case, if acceptance occurs prior to the Project Manager's recommendation of final payments, a Change Order shall be issued incorporating the necessary revisions in the Contracts 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.

11.8 City May Correct Defective Work: If the Contractor fails within a reasonable time after written notice of the Project Manager to proceed to correct defective Work or to remove and replace rejected Work as required by the Project Manager in accordance with Paragraph 11.5, or if the Contractor fails to perform the Work in accordance with the Contract Documents, the City may, after seven (7) 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, suspend the Contractor's services related thereto and take possession of the Contractor's tools, construction equipment

SAMPLE CONSTRUCTION AGREEMENT

and materials stored at the site or elsewhere. The Contractor shall allow the City's representative agents and employees such access to the site as may be necessary to enable the City to exercise its 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 Project Manager, 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 limitation, compensation for additional professional services required and 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 right hereunder.

ARTICLE 12 – INDEMNIFICATION

12.1 Disclaimer of Liability: The City shall not at any time, be liable for injury or damage occurring to any person or property from any cause, whatsoever, arising out of Contractor's construction and fulfillment of this Agreement.

12.2 Indemnification: For other, additional good valuable consideration, the receipt and sufficiency of which is hereby acknowledged:

12.2.1 Contractor shall, at its sole cost and expense, indemnify and hold harmless the City, its representatives, employees and elected and appointed officials from or on account of all claims, damages, losses, liabilities and expenses, direct, indirect or consequential including but not limited to fees and charges of engineers, architects, attorneys, consultants and other professionals and court costs arising out of or in consequence of the performance of this Agreement at all trial and appellate levels. Indemnification shall specifically include but not be limited to claims, damages, losses, liabilities and expenses arising out of or from (a) the negligent or defective design of the project and Work of this Agreement; (b) any act, omission or default of the Contractor, its subcontractors, agents, suppliers, employees, or laborers; (c) any and all bodily injuries, sickness, disease or death; (d) injury to or destruction of tangible property, including any resulting loss of use; (e) other such damages, liabilities, or losses received or sustained by any person or persons during or on account of any operations connected with the construction of this Project including the warranty period; (f) the use of any improper materials; (g) any construction defect including both patent and latent defects; (h) failure to timely complete the work; (i) the violation of any federal, state, county or city laws, ordinances or regulations by Contractor, its subcontractors, agents, servants, independent contractors or employees; (j) the breach or alleged breach by Contractor of any term of the Agreement, including the breach or alleged breach of any warranty or guarantee.

12.2.2 Contractor agrees to indemnify, defend, save and hold harmless the City, its officers, agents and employees, from all damages, liabilities, losses, claims, fines and fees, and from any and all suits and actions of every name and description that may be brought against City, its officers, agents and employees, on account of any claims, fees, royalties, or costs for any invention

SAMPLE CONSTRUCTION AGREEMENT

or patent and/or for the infringement of any and all copyrights or patent rights claimed by any person, firm, or corporation.

12.2.3 Contractor shall pay all claims, losses, liens, settlements or judgments of any nature in connection with the foregoing indemnifications including, but not limited to, reasonable attorney's fees and costs for trials and appeals.

12.2.4 If any Subcontractor, supplier, laborer, or materialmen of Contractor or any other person directly or indirectly acting for or through Contractor files or attempts to file a mechanic's or construction lien against the real property on which the work is performed or any part or against any personal property or improvements thereon or make a claim against any monies due or to become due from the City to Contractor or from Contractor to a Subcontractor, for or on account of any work, labor, services, material, equipment, or other items furnished in connection with the Work or any change order, Contractor agrees to satisfy, remove, or discharge such lien or claim at its own expense by bond, payment, or otherwise within five (5) days of the filing or from receipt of written notice from the City.

Additionally, until such time as such lien or claim is satisfied, removed or discharged by Contractor, all monies due to Contractor, or that become due to Contractor before the lien or claim is satisfied, removed or otherwise discharged, shall be held by City as security for the satisfaction, removal and discharge of such lien and any expense that may be incurred while obtaining the discharge. If Contractor shall fail to do so, City shall have the right, in addition to all other rights and remedies provided by this Agreement or by law, to satisfy, remove, or discharge such lien or claim by whatever means City chooses at the entire and sole cost and expense of Contractor which costs and expenses shall, without limitation, include attorney's fees, litigation costs, fees and expenses and all court costs and assessments, and which shall be deducted from any amount owing to Contractor. In the event the amount due Contractor is less than the amount required to satisfy Contractor's obligation under this, or any other article, paragraph or section of this Agreement, the Contractor shall be liable for the deficiency due the City.

12.2.5 The Contractor and the City agree that Section 725.06(2), Florida Statutes controls the extent and limits of the indemnification and hold harmless provisions of this Agreement, if any, and that the parties waive any defects in the wording of this Article that runs afoul of said statutory section.

ARTICLE 13 – CHANGES IN THE WORK

13.1 Without invalidating this Agreement, the City may, from time to time order additions, deletions or revisions in the Work through the issuance Task Order Amendments. Upon receipt of a Task Order Amendment, the Contractor shall proceed with the Work involved. All Work shall be executed under the applicable conditions of the Contract Documents.

SAMPLE CONSTRUCTION AGREEMENT

13.2 The Project Manager may authorize minor changes in the work not involving an adjustment in the Contract Price or the Contract Time, which are consistent with the overall intent of the Contract Documents. Such changes must be in writing and signed by the City and the Contractor.

13.3 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 the 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.

ARTICLE 14 – CHANGE OF CONTRACT PRICE

Contract Price shall not exceed that which is agreed to in this Agreement. Any increase to the Contract Price shall be executed through an Amendment to this agreement and approved by the City Commission.

14.1 Time for the City to Approve Contract Amendment: Should the cumulative amount of the executed Task Orders exceed the Contract Price, a Contract Amendment must be approved by the City Commission authorizing additional funding for this Contract.

14.2 Should the cumulative amount of the executed task orders exceed the Contract Price, a Contract Amendment must be approved by the City Commission authorizing additional funding for this Contract.

ARTICLE 15 – CHANGE OF THE CONTRACT TIME

15.1 The Contract Time shall be for two (2) years from the date of Commission award subject to two (2) one (1) year renewal terms.

15.2 All time limits stated in the Contract Documents and within each executed Task Order are of the essence. The provisions of this Article 15 shall not exclude recovery for damages for delay by the Contractor.

15.3 Delays caused by or resulting from entities, contractors or subcontractors who are not affiliated with the CONTRACTOR (non-affiliated Contractors) shall not give rise to a claim by the CONTRACTOR for damages for increases in material and/or labor costs. Such entities, contractors and subcontractors include, but are not limited to, the City's contractors and subcontractors, Florida Power and Light Company, AT&T and Florida East Coast Railway, LLC.

15.4 Rights of Various Interests: Whenever work being done by City's forces or by other contractors is contiguous to or within the limits of work covered by this Contract, the respective rights of the various interests involved shall be established by the Project Manager to secure the completion of the various portions of the work in general harmony.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 16 – LIQUIDATED DAMAGES

16.1 Upon failure of the Contractor to complete the Work of an executed Task Order within the agreed upon and approved time for said Task Order, the Contractor shall pay to the City the sum of **Five Hundred Dollars ($500.00)** for each and every calendar day that the completion of the Task Order is delayed beyond the time agreed upon for said Task Order, as fixed and agreed liquidated damages and not as a penalty, so long as the delay is caused by the Contractor. Should an act of God or the acts or omissions of the City, its agents or representatives, in derogation to the terms of this Agreement cause the delay, the Contractor shall not be responsible for the delay nor liquidated damages. Liquidated damages are fixed and agreed upon between the Parties, recognizing the impossibility of precisely ascertaining the amount of damages that will be sustained by the City as a consequence of such delay and both parties desiring to obviate any question of dispute concerning the amount of damages and the cost and effect of the failure of the Contractor to complete the Work on time. Liquidated damages shall apply separately to each Task Order for which a time of completion is given. The City shall have the right to deduct from or retain any compensation which may be due or which may become due and payable to the Contractor the amount of liquidated damages, and if the amount retained by the City is insufficient to pay in full such liquidated damages, the Contractor shall pay all liquidated damages in full. The Contractor shall be responsible for reimbursing the City, in addition to liquidated damages or other damages for delay, for all costs of engineering, architectural fees, and inspection and other costs incurred in administering the construction of the Project beyond the completion date specified or beyond an approved extension of time granted to the Contractor whichever is later. Delays caused by or resulting from entities, contractors or subcontractors who are not affiliated with the Contractor shall not give rise to a claim by Contractor for damages for increase in material and/or labor costs. Such entities, contractors and subcontractors include, but are not limited to, the City's contractors and subcontractors, Florida Power and Light Company, AT&T, and Florida East Coast Railway, LLC.

16.2 <u>No Extended Damages</u>: For other and additional good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Contractor covenants and agrees that in the event of any delay of construction or for any reason, allegation or claim, and notwithstanding the reason of the delay, reason, claim or allegation or who caused them or the construction delay or whether they were caused by the City, that there will be no entitlement to Contractor to or for any direct or indirect financial damages or losses for extended corporate overhead impact, extended project overhead impacts, project support services, mobilization or demobilization or by whatever other label or legal concept or theory and types of names or labels or basis such claims may have, or any business damages or losses of whatever type or nature, and Contractor hereby waives any right to make any such claim or claims. This provision will have application and effect when construction delays are anticipated and agreed upon by both the City and the Contractor.

ARTICLE 17 – SUSPENSION OF WORK AND TERMINATION

17.1 <u>City May Suspend Work:</u> The City may, at any time and without cause, suspend the Work or any portion of the Work for a period of not more than ninety (90) days by notice in writing to the Contractor which shall fix the date on which Work shall be

SAMPLE CONSTRUCTION AGREEMENT

resumed. The Contractor shall resume the Work on the date fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension, if the Contractor makes a claim as provided in Articles 14 and 15.

17.2 City May Terminate Work: The City retains the right to terminate this Agreement as well as any task order, with thirty (30) days prior written notice. Additionally, the City may also terminate this Agreement as well as any task order upon 15 days' notice upon the occurrence of any one or more of the following events:

17.2.1 If the Contractor commences a voluntary case or a petition is filed against the Contractor, under any chapter of the Bankruptcy Code, 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.

17.2.2 If the Contractor makes a general assignment for the benefit of creditors.

17.2.3 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.

17.2.4 If Contractor fails to begin the Work within fifteen (15) calendar days after the Project Initiation Date, or fails to perform the Work with sufficient workers and equipment or with sufficient materials to ensure the prompt completion of the Work, or shall perform the Work unsuitably, or cause it to be rejected as defective and unsuitable, or shall discontinue the prosecution of the Work pursuant to the accepted schedule or if Contractor shall fail to perform any material term set forth in the Contract Documents, or from any other cause whatsoever shall not carry on the Work in an acceptable manner, Project Manager may give notice in writing to Contractor and its Surety of such delay, neglect or default, specifying the same.

17.2.5 If the Contractor repeatedly fails to make prompt payments to subcontractors or for labor, material or equipment.

17.2.6 If the Contractor repeatedly disregards proper safety procedures.

17.2.7 If the Contractor disregards any local, state or federal laws or regulations.

17.2.8 If the Contactor otherwise violates any provisions of this Agreement.

17.3 If Contractor, within a period of ten (10) calendar days after such notice, shall not proceed in accordance therewith, the City may exclude the Contractor from the Work site and take the prosecution of the Work out of the hands of the Contractor, and take possession of the Work and all of the Contractor's tools, appliances, construction equipment and machinery at the site and use them without liability to the City for trespass or conversion, incorporate in the Work all materials and equipment stored at

SAMPLE CONSTRUCTION AGREEMENT

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 this instance, the Contractor shall not be entitled to receive any further compensation until the Work is finished.

17.3.1 If after notice of termination of Contractor's right to proceed, it is determined for any reason that Contractor was not in default, the rights and obligations of City and Contractor shall be the same as if the notice of termination had been issued pursuant to the Termination for Convenience clause as set forth in Section 17.5 below.

17.3.2 Upon receipt of Notice of Termination pursuant to Sections 17.2 or 17.5, Contractor shall promptly discontinue all affected work unless the Notice of Termination directs otherwise and deliver or otherwise make available to City all data, drawings, specifications, reports, estimates, summaries and such other information as may have been required by the Contract Documents whether completed or in process.

17.4 If the Contractor commits a default due to its insolvency or bankruptcy, the following shall apply:

17.4.1 Should this Agreement be entered into and fully executed by the parties, funds released and the Contractor (Debtor) files for bankruptcy, the following shall occur:

17.4.1.1 In the event the Contactor files a voluntary petition under 11 U.S.C. 301 or 302, or an order for relief is entered under 11 U.S.C. 303, the Contractor shall acknowledge the extent, validity, and priority of the lien recorded in favor of the City. The Contractor further agrees that in the event of this default, the City shall, at its option, be entitled to seek relief from the automatic stay pursuant to 11 U.S.C. 362. The City shall be entitled to relief from the automatic stay pursuant to 11 U.S.C. 362(d) (1) or (d) (2), and the Contactor agrees to waive the notice provisions in effect pursuant to 11 U.S.C. 362 and any applicable Local Rules of the United States Bankruptcy Court. The Contactor acknowledges that such waiver is done knowingly and voluntarily.

17.4.1.2 Alternatively, in the event the City does not seek stay relief, or if stay relief is denied, the City shall be entitled to monthly adequate protection payments within the meaning of 11 U.S.C. 361. The monthly adequate protection payments shall each be in an amount determined in accordance with the Note and Mortgage executed by the Contractor in favor of the City.

17.4.1.3 In the event the Contractor files for bankruptcy under Chapter 13 of Title 11, United States Code in additional to the foregoing provisions, the Contractor agrees to cure any amounts in arrears over a period not to exceed twenty-four (24) months from the date of the confirmation order, and such payments shall be made in addition to the regular monthly payments required by the Note and mortgage. Additionally, the Contractor shall agree that the City is over secured

SAMPLE CONSTRUCTION AGREEMENT

and, therefore, entitled to interest and attorney's fees pursuant to 11 U.S.C. 506(b). Such fees shall be allowed and payable as an administrative expense. Further, in the event the Contractor has less than five (5) years of payments remaining on the Note, the Contractor agrees that the treatment afforded to the claim of the City under any confirmed plan of reorganization shall provide that the remaining payments shall be satisfied in accordance with the Note, and that the remaining payments or claim shall not be extended or amortized over a longer period than the time remaining under the Note.

17.4.2 Should this Agreement be entered into and fully executed by the parties, and the funds have not been forwarded to Contractor, the following shall occur:

17.4.2.1 In the event the Contractor files a voluntary petition pursuant to 11 U.S.C. 301 or 302, or an order for relief is entered under 11 U.S.C. 303., the Contractor acknowledges that the commencement of a bankruptcy proceeding constitutes an event of default under the terms of this Agreement. Further, the Contractor acknowledges that this Agreement constitutes an executory contract within the meaning of 11 U.S.C. 365. The Contractor acknowledges that this Agreement is not capable of being assumed pursuant to 11 U.S.C. 365(c)(2), unless the City expressly consents in writing to the assumption. In the event the City consents to the assumption, the Contractor agrees to file a motion to assume this Agreement within ten (10) days after receipt of written consent from the City, regardless of whether the bankruptcy proceeding is pending under Chapter 7, 11, or 13 of Title 11 of the United States Code. The Contractor further acknowledges that this Agreement is not capable of being assigned pursuant to 11 U.S.C. 365(b)(1).

17.5 Termination for Convenience: This Contract may be terminated for convenience in writing by City upon thirty (30) days written notice to Contractor (delivered by certified mail, return receipt requested) of intent to terminate and the date on which such termination becomes effective. In such case, Contractor shall be paid for all work executed and expenses incurred prior to termination in addition to termination settlement costs reasonably incurred by Contractor relating to commitments which had become firm prior to the termination. Payment shall include reasonable profit for work/services satisfactorily performed. No payment shall be made for profit for work/services which have not been performed.

17.6 Where the Contractor's service has so been terminated by the City, the termination shall not affect any rights 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.

17.7 The Contractor has no right, authority or ability to terminate the Work except for the wrongful withholding of any payments due the Contractor from the City.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 18 – DISPUTE RESOLUTION

18.1 Resolution of Disputes: Questions, claims, difficulties and disputes of whatever nature which may arise relative to the technical interpretation of the Contract Documents and fulfillment of this Agreement as to the character, quality, amount and value of any work done and materials furnished, or proposed to be done or furnished under or, by reason of, the Contract Documents which cannot be resolved by mutual agreement of Contract Administrator and Contractor shall be submitted to the Consultant for resolution. When either party has determined that a disputed question, claim, difficulty or dispute is at an impasse, that party shall notify the other party in writing and submit the question, claim, difficulty or dispute to the Consultant for resolution. The parties may agree to a proposed resolution at any time without the involvement and determination of the Consultant.

18.1.1 Consultant shall notify Contract Administrator and Contractor in writing of Consultant's decision within twenty-one (21) calendar days from the date of the submission of the question, claim, difficulty or dispute, unless Consultant requires time to gather information or allow the parties to provide additional information.

18.1.2 In the event the determination of a dispute by the Consultant under this Article is unacceptable to any of the parties hereto, the party objecting to the determination must notify the other party and the City Manager, in writing within ten (10) days after receipt of the determination. The notice must state the basis of the objection and the proposed resolution. Final resolution of such dispute shall be made by the City Manager. The City Manager's decision shall be final and binding on the parties.

18.1.3 All non-technical administrative disputes (such as billing and payment) shall be determined by Contract Administrator.

18.1.4 During the pendency of any dispute and after a determination thereof, Contractor, Consultant, and Contract Administrator shall act in good faith to mitigate any potential damages including utilization of construction schedule changes and alternate means of construction. During the pendency of any dispute arising under this Agreement, other than termination herein, Contractor shall carry on the Work and adhere to the progress schedule. The Work shall not be delayed or postponed pending resolution of any disputes or disagreements.

18.1.5 For any disputes which remain unsolved, within sixty (60) calendar days after Final Completion of the Work, the parties shall participate in mediation to address all unresolved disputes. A mediator shall be mutually agreed upon by the parties. Should any objection not be resolved in mediation, the parties retain all their legal rights and remedies under applicable law. If a party objecting to a determination, fails to comply in strict accordance with the requirements of this Article, said party specifically waives all of its rights provided hereunder, including its rights and remedies under applicable law.

SAMPLE CONSTRUCTION AGREEMENT

ARTICLE 19 – NOTICES

19.1 All notices required by any of the Contract Documents shall be in writing and shall be deemed delivered upon mailing by certified mail, return receipt requested to the following:

To the City: City Manager
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, Florida 33301

with copies to:

Project Manager and City Attorney
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, Florida 33301

To the Contractor:

_____
_____
_____

ARTICLE 20 – LIMITATION OF LIABILITY

20.1 The City desires to enter into this Agreement only if in so doing the City can place a limit on the City's liability for any cause of action arising out of this Agreement, so that the City's liability for any breach never exceeds the sum of $1,000. For other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Contractor expresses its willingness to enter into this Agreement with the knowledge that the Contractor's recovery from the City to any action or claim arising from the Agreement is limited to a maximum amount of $1,000, which amount shall be reduced by the amount actually paid by the City to the Contractor pursuant to this Agreement, for any action or claim arising out of this Agreement. Nothing contained in this paragraph or elsewhere in this Agreement is in any way intended either to be a waiver of the limitation placed upon the City's liability as set forth in Section 768.28, Florida Statutes, or to extend the City's liability beyond the limits established in said Section 768.28; and no claim or award against the City shall include attorney's fees, investigative costs, expert fees, suit costs or pre-judgment interest.

20.2 <u>No Extended Damages</u>: For other and additional good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Contractor covenants and agrees that in the event of any delay of construction or for any reason, allegation or claim, and notwithstanding the reason of the delay, reason, claim or allegation or who caused them or the construction delay or whether they were caused by the City, that there will be no entitlement to Contractor to or for any direct or indirect financial damages or losses for extended corporate overhead impact, extended project

SAMPLE CONSTRUCTION AGREEMENT

overhead impacts, project support services, mobilization or demobilization or by whatever other label or legal concept or theory and types of names or labels or basis such claims may have, or any business damages or losses of whatever type or nature, and Contractor hereby waives any right to make any such claim or claims. This provision will have application and effect when construction delays are anticipated and agreed upon by both the City and the Contractor.

ARTICLE 21 – GOVERNING LAW

21.1 This Agreement shall be governed by the laws of the State of Florida. Both Parties agree that the courts of the State of Florida shall have jurisdiction of any claim arising in connection with this Agreement. Venue for any claim, objection or dispute arising out of this Agreement shall be in Broward County, Florida. **By entering into this contract, Contractor and City hereby expressly waive any rights either party may have to a trial by jury of any civil litigation related to, or arising out of the Project. Contractor shall specifically bind all subcontractors to the provisions of this Contract**.

ARTICLE 22 – MISCELLANEOUS

22.1 The duties and obligations imposed by this Agreement and the rights and remedies available to the parties and, in particular but without limitation, the warranties, guaranties and obligations imposed upon the Contractor and all of the rights and remedies available to the City, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents, and the provisions of this Paragraph will survive final payment and termination or completion of this Agreement.

22.2 The Contractor shall not assign or transfer this Agreement or its rights, title or interests. The obligations undertaken by the Contractor pursuant to this Agreement shall not be delegated or assigned to any other person or firm. Violation of the terms of this Paragraph shall constitute a material breach of Agreement by the Contractor and the City any, at its discretion, cancel this Agreement and all rights, title and interest of the Contractor which shall immediately cease and terminate.

22.3 The Contractor and its employees, volunteers and agents shall be and remain an independent contractors and not agents or employees of the City with respect to all of the acts and services performed by and under the terms of this Agreement. This Agreement shall not in any way be constructed to create a partnership, association or any other kind of joint undertaking or venture between the Parties.

22.4 The City reserves the right to audit the records of the Contractor relating in any way to the Work to be performed pursuant to this Agreement at any time during the performance and term of this Agreement and for a period of three (3) years after completion and acceptance by the City. If required by the City, the Contractor agrees to submit to an audit by an independent certified public accountant selected by the City. The Contractor shall allow the City to inspect, examine and review the records of

SAMPLE CONSTRUCTION AGREEMENT

the Contractor at any and all times during normal business hours during the term of this Agreement.

22.5 The remedies expressly provided in this Agreement to the City shall not be deemed to be exclusive but shall be cumulative and in addition to all other remedies in favor of the City now or later existing at law or in equity.

22.6 Should any part, term or provisions of this Agreement be decided by the courts to be invalid, illegal or in conflict with any state or federal law, the validity of the remaining portion or provision shall not be affected.

22.7 Prohibition Against Contracting With Scrutinized Companies: Subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the "Cuba Amendment," the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2016), that it is not engaged in a boycott of Israel, and that it does not have business operations in Cuba or Syria, as provided in section 287.135, Florida Statutes (2016), as may be amended or revised. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2016), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2016), or is engaged in a boycott of Israel or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2016), as may be amended or revised.

22.8 Public Entity Crimes: In accordance with the Public Crimes Act, Section 287.133, Florida Statutes, a person or affiliate who is a contractor, consultant or other provider, who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to the City, may not submit a bid on a contract with the City for the construction or repair of a public building or public work, may not submit bids on leases of real property to the City, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with the City, and may not transact any business with the City in excess of the threshold amount provided in Section 287.017, Florida Statutes, for category two purchases for a period of thirty-six (36) months from the date of being placed on the convicted vendor list. Violation of this section by Contractor shall result in cancellation of the City purchase and may result in Contractor debarment.

22.9 Attorney Fees: If CITY or CONSULTANT incurs any expense in enforcing the terms of this Agreement through litigation, the prevailing party in that litigation shall be reimbursed for all such costs and expenses, including but not limited to court costs, and reasonable attorney fees incurred during litigation.

SAMPLE CONSTRUCTION AGREEMENT

22.10 Public Records

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT PRRCONTRACT@FORTLAUDERDALE.GOV, 954-828-5002, CITY CLERK'S OFFICE, 100 N. ANDREWS AVENUE, FORT LAUDERDALE, FLORIDA 33301.

Contractor shall:

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

2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2016), as may be amended or revised, or as otherwise provided by law.

3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this contract if the Contractor does not transfer the records to the City.

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

SAMPLE CONSTRUCTION AGREEMENT

Stormwater Lining, CCTV and Trench Technologies
(Contractor)
Project 12210

CITY

IN WITNESS OF THE FOREGOING**,** the parties have set their hands and seals the day and year first above written.

CITY OF FORT LAUDERDALE, a municipal corporation of the State of Florida

By: _____
LEE R. FELDMAN, City Manager

(CORPORATE SEAL)

ATTEST:

By: _____
JEFFREY A. MODARELLI
City Clerk

Approved as to Legal Form:

By:_____
RHONDA MONTOYA HASAN
Assistant City Attorney

SAMPLE CONSTRUCTION AGREEMENT

CONTRACTOR

WITNESSES:

CONTRACTOR.,
a Florida corporation.

_____ By_____

_____ _____ _____
Print Name PRINT NAME Title

_____ ATTEST:

_____ BY: _____
Print Name

_____ _____
PRINT NAME Secretary

(CORPORATE SEAL)

STATE OF FLORIDA:
COUNTY OF BROWARD:

The foregoing instrument was acknowledged before me this _____ day of _____, 2017, by _____ (Name), as _____ (Title) of _____ (CONTRACTOR), a Florida corporation, on behalf of the Corporation.

SEAL

_____
Notary Public, State of Florida

_____
Name of Notary Typed, Printed or Stamped

☐ Personally Known or ☐ Produced Identification:

Type of Identification Produced: _____

SAMPLE CONSTRUCTION AGREEMENT

GENERAL CONDITIONS

Unless otherwise modified in the projects special conditions, the following General Conditions shall be part of the Contract:

GC - 01 - DEFINITIONS - The following words and expressions, or pronouns used in their stead, shall wherever they appear in the Contract and the Contract Documents, be construed as follows:

"Addendum" or "Addenda" - shall mean the additional Contract provisions issued in writing, by the Engineer, prior to the receipt of bids.

"Bid" – shall mean the offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

"Bidder" – shall mean any person, firm, company, corporation or entity submitting a Bid for the Work.

"Bonds" –shall mean Bid, performance and payment bonds and other instruments of security, furnished by Contractor and his surety in accordance with the Contract Documents.

“City” – shall mean the City of Fort Lauderdale, Florida, a Florida municipal corporation. In the event the City exercises its regulatory authority as a government body, the exercise of such regulatory authority and the enforcement of any rules, regulations, codes, laws and ordinances shall be deemed to have occurred pursuant to City’s authority as a governmental body and shall not be attributable in any manner to the City as a party to this Contract. For the purpose of this Contract, “City” without modification shall mean the City Commission, and/or City Manager or his/her designee(s) as applicable.

“Construction Manager” - shall mean the Public Works Director or his/her designee.

“Construction Project Manager” - shall mean the Public Works Director or his/her designee.

"Consultant" – shall mean a person, firm, company, corporation or other entity employed by the City to perform the professional services for the project.

“Contract Work” - shall mean everything expressed or implied to be required to be furnished and furnished by the Contractor by any one or more of the parts of the Contract Documents referred to in the Contract hereof except Extra Work as hereinafter defined, it being understood that, in case of any inconsistency in or between any part or parts of this Contract, the Public Works Director shall determine which shall prevail.

“Design Documents” – shall mean the construction plans and specifications included as part of a Bid/Proposal Solicitation prepared either by the City or by the Consultant under a separate Agreement with the City.

“Engineer” - shall mean the Public Works Director or his/her designee.

"Extra Work" - shall mean work other than that required by the Contract.

"Inspector" – shall mean an authorized representative of the City assigned to make necessary inspections of materials furnished by Contractor and of the Work performed by Contractor.

"Notice" - shall mean written notice sent by certified United States Mail, return receipt requested, or sent by commercial express carrier with acknowledgement of delivery, or via fax or email, or by hand delivery with a request for a written receipt of acknowledgment of delivery and shall be served upon the Contractor either personally or to its place of business listed in the Bid.

“Owner” - shall mean the City of Fort Lauderdale.

“Project Manager” - shall mean the Public Works Director or his/her designee.

"Public Works Director" –shall mean the Public Works Director of the City of Fort Lauderdale, Florida or his/her designee(s).

"Site" - shall mean the area upon or in which the Contractor's operations are carried out and such other areas adjacent thereto as may be designated as such by the Public Works Director.

"Subcontractor" - shall mean any person, firm, company, corporation or other entity, other than employees of the Contractor, who or which contracts with the contractor, to furnish, or actually furnishes labor and materials, or labor and equipment, or labor, materials and equipment at the site.

"Surety" - shall mean any corporation or entity that executes, as Surety, the Contractor's performance and payment bond securing the performance of this Contract.

GC - 02 - SITE INVESTIGATION AND REPRESENTATION - The Contractor acknowledges that it has satisfied itself as to the nature and location of the Work under the Contract Documents, the general and local conditions of the Site, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, and roads, the conformation and conditions at the ground based on City provided reports, the type of equipment and facilities needed preliminary to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under the Contract Documents.

The Contractor acknowledges that it has conducted extensive tests, examinations and investigations and represents and warrants a thorough familiarization with the nature and extent of the Contract Documents, the Work, locality, soil conditions, moisture conditions and all year-round local weather and climate conditions (past and present), and, in reliance on such tests, examination and investigations conducted by Contractor and the Contractor’s experts, has determined that no conditions exist that would in any manner affect the Bid Price and that the project can be completed for the Bid Price submitted.

The Contractor, on its own, has made or caused to be made examinations, investigations, tests and studies of reports and related data in addition to those referred above, as Contractor deemed necessary to perform the Work at the Bid price set by the Contractor, within the contract time and in accordance with the other terms and conditions of the Contract Documents and the Bid made by the Contractor; and no additional examinations, investigations, tests, reports or similar data are, or will be, required by Contractor to assure that the Work can be done at the Bid price set by the Contractor.

The Contractor further acknowledges that it has satisfied itself based on any geotechnical reports the City may provide and inspection of the project Site as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site and from evaluating information derived from exploratory work that may have been done by the City or included in the

Contract Documents and finds and has further determined that no conditions exist that would in any manner affect the Bid price and that the project can be completed for the Bid price submitted..

Any failure by the Contractor to acquaint itself with all the provided information and information obtained by visiting the project Site will not relieve Contractor from responsibility for properly estimating the difficulty or cost thereof under the Contract Documents. In the event that the actual subsurface conditions vary from the actual City provided reports, the Contractor shall notify the City and the Contract amount may be adjusted depending on the conditions, at the approval of the City.

GC - 03 - SUBSTITUTIONS - If the Contractor desires to use materials and/or products of manufacturer's names different from those specified in the Contract Documents, the Bidder requesting the substitution shall make written application as described herein. The burden of proving the equality of the proposed substitution rests on the Bidder making the request. To be acceptable, the proposed substitution shall meet or exceed all expressed requirements of the Contract Documents and shall be submitted upon the Contractor's letterhead, in addition to the "Contractor's Request for Substitution" form provided by the Public Works Director. The following requirements shall be met in order for the substitution to be considered:

1. Requests for substitution shall reach the Public Works Director no less than ten (10) Working Days prior to the date set for opening of Bids; and

2. Requests for substitution shall be accompanied by such technical data, as the party making the request desires to submit. The Public Works Director will consider reports from reputable independent testing laboratories, verified experience records from previous users and other written information valid in the circumstances; and

3. Requests for substitution shall completely and clearly indicate in what respects the materials and/or products differ from those indicated in the Contract Documents; and

4. Requests for substitution shall be accompanied by the manufacturer's printed recommendations clearly describing the installation, use and care, as applicable, of the proposed substitutions; and

5. Requests for substitution shall be accompanied by a complete schedule of changes in the Contract Documents, if any, which must be made to permit the use of the proposed substitution; and

If a proposed substitution is approved by the Public Works Director, an Addendum will be issued to prospective bidders not less than three (3) working days prior to the date set for opening of Bids. Unless substitutions are received and approved as described above, the successful Bidder shall be responsible for furnishing materials and products in strict accordance with the Contract Documents.

GC - 04 - CONTROL OF THE WORK - The Public Works Director shall have full control and direction of the Work in all respects. The Public Works Director and/or his authorized designee(s) shall, at all times, have the right to inspect the Work and materials. The Contractor shall furnish all reasonable facilities for obtaining such information, as the Public Works Director may desire respecting the quality of the Work and materials and the manner of conducting the Work. Should the Contractor be directed or permitted to perform night Work, or to vary the period which work is ordinarily carried on in the daytime, he shall give ample notice to the Public Works Director so that proper and adequate inspection may be provided. Such Work shall be done only under such regulations as are furnished in writing by the Public Works Director, and no extra compensation shall be allowed to the Contractor therefore. In the event of night work, the Contractor shall furnish

such light, satisfactory to the Public Works Director, as will insure proper inspection. Nothing herein contained shall relieve the Contractor from compliance with any and all City ordinances relating to noise or Work during prohibited hours.

The Contractor shall keep the Public Works Director informed, a reasonable time in advance, as to his need for grades and lines in order that the same may be furnished and all necessary measurements made for records and for payment with the minimum of inconvenience to the Public Works Director or of delay to the Contractor. The Contractor shall submit to the Public Works Director or Inspector on the job a written request outlining the streets, etc., for which the Contractor desires lines and grades. It is the intention not to delay the Work for the giving of lines and grades, but when necessary, work operations shall be suspended for such reasonable time as the Public Works Director may require for this purpose. However, such cost increases shall be authorized either by the City Manager and/or designee, or the City Commission based upon the purchasing threshold amounts provided for in Chapter 2 of the City of Fort Lauderdale's Code of Ordinances.

GC - 05 - SUBCONTRACTOR - The Contractor shall not sublet, in whole or any part of the Work without the written consent and approval of the Public Works Director. Within ten (10) days after official notification of starting date, the Contractor must submit in writing, to the Public Works Director, a list of all Subcontractors. No Work shall be done by any Subcontractor until such Subcontractor has been officially approved by the Public Works Director. A subcontractor not appearing on the original list will not be approved without written request submitted to the Public Works Director and approved by the Public Works Director. In all cases, the Contractor shall give his personal attention to the Work of the Subcontractors and the Subcontractor is liable to be discharged by the Contractor, at the direction of the Public Works Director, for neglect of duty, incompetence or misconduct.

Acceptance of any Subcontractor, other person, or organization by the Public Works Director shall not constitute a waiver of any right of Public Works Director to reject defective Work or Work not in conformance with the Contract Documents.

Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between City and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of City to pay or to see to the payment of any moneys due to any Subcontractor or other person, or organization, except as may otherwise be required by law.

GC – 06 - **QUANTITIES** - It is mutually agreed that the proposal shows the approximate amounts only along with the Plans and the general location. It is also mutually agreed that no change will be made involving any departure from the general scheme of the Work and that no such change involving a material change in cost, either to the City or Contractor, shall be made, except upon written permission of the City. However, the Public Works Director shall have the right to make minor alternations in the line, grade, plan, form or materials of the Work herein contemplated any time before the completion of the same. That if such alterations shall diminish the quantity of the Work to be done, such alterations shall not constitute a claim for damages or anticipated profits. That if such alterations increase the amount of the Work to be done, such increase shall be paid for according to the quantity actually performed and at the unit price or prices stipulated therefore in the Contract.

The City shall, in all cases of dispute, determine the amount or quantity of the several kinds of Work which are to be paid for under this Contract, and shall decide all questions relative to the execution of the same, and such estimates and decisions shall be final and binding.

Any Work not herein specified, which might be fairly implied as included in the Contract, of which the City shall judge, shall be done by the Contractor without extra charge. However, such cost increases shall be authorized either by the City Manager and/or designee, or the City Commission based upon the purchasing threshold amounts provided for in Chapter 2 of the City of Fort Lauderdale's Code of Ordinances.

GC–07 - NO ORAL CHANGES - Except to the extent expressly set forth in the Contract, no change in or modification, termination or discharge of the Contract in any form whatsoever, shall be valid or enforceable unless it is in writing and signed by the parties charged, therewith or their duly authorized representative.

GC - 08 - PERMITS AND PROTECTION OF PUBLIC – Permits on file with the City and or those permits to be obtained shall be considered directive in nature and will be considered a part of this Contract. A copy of all permits shall be given to the City and become part of the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.

The Contractor shall be required to observe all the ordinances in relation to obtaining permits for occupying, excavating, or in any way obstructing the streets and alleys. He shall erect and maintain barricades and sufficient safeguards around all excavations, embankments or obstructions; he shall place sufficient warning lights at or near the Work; keep the same burning from sunset to sunrise, employ watchmen, and strictly obey all laws and ordinances controlling or limiting those engaged in similar work.

Where there are telephones, light or power poles, water mains, conduits, pipes or drains or other construction, either public or private, in or on the streets or alleys, the Work shall be so conducted that no interruption or delay will be caused in the operation or use of the same. Proper written notice shall be given, and all the facilities, afforded the owners of such construction encountered or likely to be encountered, as will enable them to preserve the same from injury.

The Contractor shall not be permitted to interfere with public travel and convenience by grading or tearing up streets indiscriminately, but the Work of constructing the various items in this contract shall proceed in an orderly, systematic and progressive manner.

Contractor shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

Where lifting operations involving the use of specialized cranes are required as part of construction, Contractor must make undertake the following investigation and submit the results and documentation to the Engineer prior to commencing any lifting operations: marking a very specific area in the field for the placement of the crane; a drawing showing the limitations of the job operation (i.e. not over adjacent properties or pedestrian and high vehicular traffic areas);underground utility exploration in the vicinity of the crane location, which may include ground penetrating radar to identify voids or old pipe or other subsurface features that could lead to sudden failure; assessment of the underlying soil and roadway materials and a worst case analysis based on entire load being distributed on just one or two outriggers; provision of properly sized pads under the outriggers; loading charts from manufacturer showing allowable configurations/loads; and inspection to make sure crane operation is in accordance with the permit conditions.

GC - 09 - DISEASE REGULATIONS - The Contractor shall enforce all sanitary regulations and take all precautions against infectious diseases as the Public Works Director may deem necessary. Should any infectious or contagious diseases occur among his employees, he shall arrange for the immediate removal of the employee from the Site and isolation of all persons connected with the Work.

GC - 10 - CONTRACTOR TO CHECK PLANS, SPECIFICATIONS, AND DATA - The Contractor shall verify all dimensions, quantities, and details shown on the plans, supplementary drawings, schedules, or other data received from the Public Works Director, and shall notify the Public Works Director of all errors, omissions, conflicts and discrepancies found therein within three (3) working days of discovery. Failure to discover or correct errors, conflictions, or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory Work, faulty construction, or improper operation resulting there from nor from rectifying such condition at his own expense.

GC - 11 - SUPPLEMENTARY DRAWINGS - When, in the opinion of the Public Works Director, it becomes necessary to explain more fully the Work to be done, or to illustrate the work further, or to show any changes which may be required, drawings, known as supplementary drawings, with specifications pertaining thereto, will be prepared by the Public Works Director and copies will be given to the Contractor.

The supplementary drawings shall be binding upon the Contractor with the same force as the original Plans. Where such supplementary drawings require either less or more than the estimated quantities of work, credit to the City or compensations therefore to the Contractor shall be subject to the terms of the Contract.

GC - 12 - MATERIALS AND WORKMANSHIP - All material and workmanship shall, in every respect, be in conformity with approved modern practice and with prevailing standards of performance and quality. In the event of dispute the Public Works Director's decision shall be final. Wherever the Plans, specifications, Contract Documents, or the directions of the Public Works Director are unclear as to what is permissible and/or fail to note the quality of any Work, that interpretation will be made by the Public Works Director, which is in accordance with approved modern practice, to meet the particular requirements of the Contract.

In all cases, new materials shall be used, unless this provision is waived by notice from the City in writing.

GC - 13 - SAFEGUARDING MARKS - The Contractor shall safeguard all points, stakes, grade marks, monuments, and bench marks made or established on the Work, bear the cost of re-establishing same if disturbed, or bear the entire expense of rectifying Work improperly installed due to not maintaining or protecting or for removing without authorization, such established points, stakes and marks. The Contractor shall safeguard all existing and known property corners, monuments and marks not related to the Work and, if required, shall bear the cost of having them re-established by a licensed surveyor if disturbed or destroyed during the course of construction.

GC - 14 - EXISTING UTILITY SERVICE - All existing utility service shall be maintained with a minimum of interruption at the expense of the Contractor.

GC - 15 - JOB DESCRIPTION SIGNS – Contractor, at Contractor's expense, shall furnish, erect, and maintain suitable weatherproof signs on jobs over $100,000 containing the following information:

1. City Seal (in colors)
2. Project or Improvement Number
3. Job Description
4. Estimated Cost
5. Completion Date

Minimum size of sign shall be four feet high, eight feet wide and shall be suitably anchored. The entire sign shall be painted and present a pleasing appearance. Exact location of signs will be determined in the field. Two (2) signs will be required, one at each end of the job. All costs of this work shall be included in other parts of the work.

GC - 16 - FLORIDA EAST COAST RIGHT-OF-WAY - Whenever a City contractor is constructing within the Florida East Coast Railway Company's Right-of-Way, it will be mandatory that the contractor carry separate bodily injury and property damage insurance in the amounts as stated below. This insurance shall be taken out and maintained during the life of the Contract.

Bodily injury insurance in an amount not less than $500,000.00 for injuries, including wrongful death to any one person, and subject to the same limit for each person, in an amount not less than $1,000,000.00 on account of any one occurrence, and

Property damage insurance in an amount not less than $500,000.00 for damages on account of any one occurrence and in an amount not less than $1,000,000.00 for damages on account of all occurrences.

GC - 17 - ACCIDENTS - The Contractor shall provide such equipment and facilities as are necessary and/or required, in the case of accidents, for first aide services to be provided to a person who may be injured during the project duration. The Contractor shall also comply with the OSHA requirements as defined in the United States Labor Code 29 CFR 1926.50.

In addition, the Contractor must report immediately to the Public Works Director every accident to persons or damage to property, and shall furnish in writing full information, including testimony of witnesses regarding any and all accidents.

GC - 18 - SAFETY PRECAUTIONS - Contractor must adhere to the applicable environmental protection guidelines for the duration of a project. If hazardous waste materials are used, detected or generated at any time, the Project Manager must be immediately notified of each and every occurrence. The Contractor shall comply with all codes, ordinances, rules, orders and other legal requirements of public authorities (including OSHA, EPA, DERM, the City, Broward County, State of Florida, and Florida Building Code), which bear on the performance of the Work.

The Contractor shall take the responsibility to ensure that all Work is performed using adequate safeguards, including but not limited to: proper safe rigging, safety nets, fencing, scaffolding, barricades, chain link fencing, railings, barricades, steel plates, safety lights, and ladders that are necessary for the protection of its employees, as well as the public and City employees. All riggings and scaffolding shall be constructed with good sound materials, of adequate dimensions for their intended use, and substantially braced, tied or secured to ensure absolute safety for those required to use it, as well as those in the vicinity. All riggings, scaffolding, platforms, equipment guards, trenching, shoring, ladders and similar actions or equipment shall be OSHA approved, as applicable, and in accordance with all Federal, State and local regulations.

GC - 19 - DUST PREVENTION - The Contractor shall, by means of a water spray, or temporary asphalt pavement, take all necessary precautions to prevent or abate a dust nuisance arising from dry weather or Work in an incomplete stage. All costs of this Work shall be included in cost of other parts of the Work.

Should the Contractor fail to abate a dust nuisance by the above methods, and then he will be required to immediately construct temporary patches per City standards.

GC - 20 - PLACING BARRICADES AND WARNING LIGHTS - The Contractor shall furnish and place, at his own expense, all barricades, warning lights, automatic blinker lights and such devices necessary to properly protect the work and vehicular and pedestrian traffic. Should the Contractor fail to erect or maintain such barricades, warning lights, etc., the Public Works Director may, after 24 hours' notice to the Contractor, proceed to have such barricades and warning lights placed and maintained by City or other forces and all costs incurred thereof charged to the Contractor and may be retained by the City from any monies due, or to become due, to the Contractor.

GC - 21 - TRAFFIC CONTROL - The Contractor shall coordinate all Work and obtain, through the Engineering Department, any permits required to detour traffic or close any street before starting to work in the road. The following section: Part VI Traffic Controls for Street and Highway Construction and Maintenance Operations, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, U.S. Department of Transportation Federal Highway Administration, 2009, or current edition, shall be used as a guide for requirement and placement of traffic control devices, signs and barricades. The Public Works Director shall determine requirements for the above. The above publication is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. In the event that a Maintenance of Traffic (MOT) Plan is required, the Plan shall be prepared by an A.A.S.T.A. certified technician.

All traffic control devices, flashing lights, signs and barricades shall be maintained in working condition at all times.

GC - 22 - COORDINATION - The Contractor shall notify all utilities, transportation department, etc., in writing, with a copy to the Public Works Director before construction is started and shall coordinate his Work with them. The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal, construction and rearrangement operations in order that services rendered by these parties will not be unnecessarily interrupted.

The Contractor shall arrange his Work and dispose of his materials so as to not interfere with the operation of other Contractors engaged upon adjacent work and to join his Work to that of others in a proper manner and to perform his Work in the proper sequence in relation to that of other Contractors all as may be directed by the Public Works Director.

Each Contractor shall be responsible for any damage done by him or his agents to the work performed by another Contractor.

The Contractor shall contact the Broward County Transportation Department and the Florida Department of Transportation, as applicable, to verify and obtain location of any and all traffic conduits, loops, and street light underground services.

GC - 23 - WATER - Bulk water used for construction, flushing pipelines, and testing shall be obtained from fire hydrants. Contractor shall make payment for hydrant meter at Treasury Billing

Office, 1st Floor, City Hall, 100 N. Andrews Avenue. With the paid receipt, contractor can pick up hydrant meter at the utility location office. No connection shall be made to a fire hydrant without a meter connected.

GC - 24 - PROHIBITION AGAINST CONTRACTING WITH SCRUTINIZED COMPANIES - Subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the "Cuba Amendment," the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2016), that it is not engaged in a boycott of Israel, and that it does not have business operations in Cuba or Syria, as provided in section 287.135, Florida Statutes (2016), as may be amended or revised. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2016), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2016), or is engaged in a boycott of Israel or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2016), as may be amended or revised.

GC - 25 - LOCATION OF UNDERGROUND FACILITIES - If the Proposer, for the purpose of responding to this solicitation, requests the location of underground facilities through the Sunshine State One-Call of Florida, Inc. notification system or through any person or entity providing a facility locating service, and underground facilities are marked with paint, stakes or other markings within the City pursuant to such a request, then the Proposer shall be deemed non-responsive to this solicitation in accordance with Section 2-184(5) of the City of Fort Lauderdale Code of Ordinances.

GC - 26 – USE OF FLORIDA LUMBER TIMBER AND OTHER FOREST PRODUCTS - In accordance with Florida Statute 255.20 (3), The City specifies that lumber, timber, and other forest products used for this project shall be produced and manufactured in the state of Florida if such products are available and their price, fitness, and quality are equal. This requirement does not apply to plywood specified for monolithic concrete forms, if the structural or service requirements for timber for a particular job cannot be supplied by native species, or if the construction is financed in whole or in part from federal funds with the requirement that there be no restrictions as to species or place of manufacture.

The Bidder affirms by submitting a bid response to this solicitation that they will comply with section 255.20 (3) Florida Statutes.

GC – 27 – PUBLIC RECORDS/TRADE SECRETS/COPYRIGHT: The Proposer's response to the Solicitation is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this Solicitation and the Contract to be executed for this Solicitation, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the Solicitation purporting to require confidentiality of any portion of the Proposer's response to the Solicitation, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Proposer shall clearly designate that it is a Trade Secret and that it is

asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer's response to the Solicitation constitutes a Trade Secret. The City's determination of whether an exemption applies shall be final, and the proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records. Proposals purporting to be subject to copyright protection in full or in part will be rejected.

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

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

Telephone Number: **(954) 828-5002**

Mailing Address: **City Clerk's Office**
100 N. Andrews Avenue
Fort Lauderdale, FL 33301

E-mail: **prrcontract@fortlauderdale.gov**

Contractor shall:

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

2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2016), as may be amended or revised, or as otherwise provided by law.

3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this contract if the Contractor does not transfer the records to the City.

4. Upon completion of the Contract, transfer, at no cost, to the City all public records in possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of this Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the

Contractor keeps and maintains public records upon completion of this Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

SECTION 01000
GENERAL REQUIREMENTS

PART 1 PROJECT DESCRIPTION

1.1 GENERAL

A. A brief description of the Work is stated in the NOTICE TO CONTRACTORS. CONTRACTOR shall review the entire Contract Documents to determine the full scope of the Project or any particular part of the Project.

B. The work under this Contract shall be performed by the CONTRACTOR as required by the CITY. Work will be authorized in the form of a Notice to Proceed (NTP) issued to the CONTRACTOR. The CONTRACTOR shall complete all work in the Contract within the number of calendar days stipulated in the Contract unless an extension in the time of completion is granted by the CITY, as stated in the INSTRUCTIONS TO BIDDERS. Upon completion of the work and compliance with applicable provisions in the Contract Documents, the CONTRACTOR will receive final payment for all work done.

C. The following additional information, though not all inclusive, is given to assist contractors in their evaluation of the work required to meet the project objectives.

D. The CONTRACTOR shall become familiar with the existing operating conditions of the CITY's water system, sewage transmission system, stormwater and pumping stations and take such into consideration in planning and scheduling work. No extra claims shall be made for work required to achieve conditions beyond those obtainable under normal operation of the existing transmission, collection and pumping facilities necessary to accomplish the work.

1.2 DOT SPECIFICATIONS

A. Portions of The Florida Department of Transportation Standard Specifications for Road and Bridge Construction and their Roadway and Traffic Design Standards, hereinafter referred to as the DOT Standard Specifications, are referred to herein and amended, in part, and the same 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. Such reference shall mean the current edition, including all supplements. In case of a conflict in the requirements of the DOT Specifications and the requirements stated herein, the requirements herein shall prevail.

B. CONTRACTOR will be required to submit MOTs for work in the county and state highways and City streets. CONTRACTOR shall coordinate with MOTs for nearby or highway work and obtain approval for all traffic control as required by the permits contained elsewhere in this section.

PART 2 SEQUENCE OF OPERATIONS

2.1 SCHEDULING

A. General: Prepare and submit schedule in accordance with the provisions of the City of Fort Lauderdale's Stormwater Lining, CCTV & Trenchless Technology Annual Contract. (Pages C-1 – C-36)

B. Plan the Work and carry it out with minimum interference to the operation of the existing facilities. Prior to starting the work, confer with CITY's representative to develop an approved work schedule, which will permit the facilities to function as normally as practical. In some occasions, it may be necessary to do certain parts of the construction work outside normal working hours in order to avoid undesirable conditions. The CONTRACTOR shall do this work at such times as approved by CITY and at no additional cost to the CITY. Do not make connections between existing work and new work until necessary inspection and tests have been completed on the new work and it is found to conform in all respects to the requirements of the Contract Documents.

C. No work shall be started until the CONTRACTOR has received approved shop drawings, established material/delivery dates for all equipment, and received approval of the construction schedule from the CITY. The CONTRACTOR shall have sufficient manpower, equipment, and material to complete the project.

D. No work shall commence without express consent of the CITY.

E. If a privately owned staging area is required, no work shall commence until approval of the facility is obtained from City Planning and Zoning in accordance with Section 47-19.2 of the Unified Land Development Regulations. Submit a copy of the approval and agreement to the CITY.

2.2 MOBILIZATION AND DEMOBILIZATION

A. CONTRACTOR shall be responsible for mobilization and demobilization of labor, materials and equipment. Payment for mobilization and demobilization shall be included in the lump sum price indicated in the Proposal for the Project.

2.3 COORDINATION

A. CONTRACTOR shall cooperate in the coordination of separate activities in a manner that will provide the least interference with the CITY's operations and other contractors and utility companies working in the area, and in the interfacing and connection of the separate elements of the overall project work.

B. If any difficulty or dispute should arise in the accomplishment of the above, the problem shall be brought immediately to the attention of the CITY.

2.4 SHUTDOWN OF EXISTING OPERATIONS OR UTILITIES

A. Continuous operation of the CITY's service functions is of critical importance. The CONTRACTOR's work shall not result in the interruption of sewage, water, or solid waste service to any customers.

B. Minimizing conflicts with the ongoing area-wide commercial activities is of critical importance. The CONTRACTOR's work shall minimize in the interruption of operations at any facility or business.

C. Connections to existing services or utilities, or other work that requires the temporary shutdown of any existing operations or utilities shall be planned in detail with appropriate scheduling of the work and coordinated with the CITY. Two business days advanced notice shall be given in order that the CITY may witness the shutdown, tie-in, and startup. The temporary shutdown must be approved by the CITY. All tie-in and bypass operations shall be the responsibility of the CONTRACTOR and are considered incidental to the cost of construction and provided at no additional cost to the CITY.

D. All materials and equipment (including emergency equipment) necessary to expedite the tie-in shall be on hand prior to the shutdown of existing services or utilities.

2.5 OPERATION OF EXISTING SYSTEM PROHIBITED

A. At no time undertake to close off any utility lines or open valves or take any other action which would affect the operation of existing systems. The CITY's forces will operate all valves. Provide at least one business day notice to PROPERTY MANAGER prior to any operations.

PART 3 SITE CONDITIONS

3.1 SITE INVESTIGATION AND REPRESENTATION

A. The CONTRACTOR acknowledges satisfaction as to the general nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation, availability of labor, water, electric power, roads, and uncertainties of weather, river stages, or similar physical conditions, the character of equipment and facilities needed preliminary to and during the prosecution of the work, and all other matters which can in any way affect the work or the cost thereof under this Contract.

B. Failure by the CONTRACTOR to become acquainted with the physical conditions and all the available information will not relieve the CONTRACTOR from responsibility for properly estimating the difficulty or cost of successfully performing the work.

C. The CONTRACTOR warrants that as a result of examination and investigation of all the aforesaid data, the CONTRACTOR can perform the work in a good and workmanlike manner and to the satisfaction of the CITY. The CITY assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of this Contract, unless:

1. Such representations are expressly stated in the Contract, and

2. The Contract expressly provides that the responsibility therefore is assumed by the CITY.

3.2 INFORMATION ON SITE CONDITIONS

General: Information obtained by the CITY or CONTRACTOR regarding site conditions, subsurface information, groundwater elevations, existing construction of site facilities as applicable, and similar data will be available for inspection at the office of the CITY upon request. Such information is offered as supplementary information only.

3.3 UTILITIES

A. The CONTRACTOR shall be responsible for determining and/or confirming, at his cost, the locations of all utilities within the project area, and shall be responsible for contacting each utility for location and notification prior to commencing work.

B. The CONTRACTOR shall contact potentially affected utilities as provided in Section 01040, COORDINATION.

C. The CONTRACTOR shall contact Sunshine State One Call at 1-800-432-4770 at least 2 working days prior to any excavation and make arrangements for locating all utilities in the project area.

3.4 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

A. Where the CONTRACTOR's operations could cause damage or inconvenience to utilities, telephone, television, power, water, or sewer systems, the operations shall be suspended until all arrangements necessary for the protection of these utilities and services have been made by the CONTRACTOR with the owner of the utility affected.

B. Notify all utility offices which are affected by the construction operation at least 2 working days in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities.

C. The CONTRACTOR shall be solely and directly responsible to the CITY and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this Contract.

D. Neither the CITY nor its officers or agents shall be responsible to the CONTRACTOR for damages as a result of the CONTRACTOR's failure to protect utilities encountered in the work.

E. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no case shall interruption of any water or utility service be allowed to exist outside working hours unless prior approval is granted.

F. In the event the CONTRACTOR encounters water service lines or sewer laterals that interfere with trenching, CONTRACTOR may, by obtaining prior approval of the property owner and the CITY, cut the service, dig through, and restore the service with similar and equal materials at the CONTRACTOR's expense.

G. The CONTRACTOR shall replace, at his own expense, all existing utilities or structures removed or damaged during construction, unless otherwise provided for in these Contract documents or ordered by CITY.

3.5 INTERFERING STRUCTURES

A. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground.

B. Protect underground and aboveground existing structures from damage, whether or not they lie within the limits of the easements obtained by the CITY. Where such existing fences, gates, sheds, buildings, or any other structure must be removed in order to properly carry out the construction, or are damaged during construction, restore to their original condition to the satisfaction of the property owner involved at the CONTRACTOR's own expense. Notify the CITY and PROJECT MANAGER of any damaged underground structure, and make repairs or replacements before backfilling.

C. Without additional compensation, the CONTRACTOR may remove and shall replace in a condition as good as or better than original, such small miscellaneous structures as fences, mailboxes, and signposts that interfere with the CONTRACTOR's operations.

3.6 EASEMENTS

A. Where portions of the work are located on public or private property, easements and permits will be obtained by the CITY, except as otherwise noted in these Specifications. Easements will provide for the use of property for construction purposes to the extent indicated on the easements. Copies of these easements and permits are available upon request to the CITY. It shall be the CONTRACTOR's responsibility to determine the adequacy of the easement obtained in every case and to abide by all requirements and provisions of the easement. The CONTRACTOR shall confine his construction operations to within the easement limits or street right-of-way limits or make special arrangements with the property owners or appropriate public agency for the additional area required. Any damage to property, either inside or outside the limits of the easements provided by the CITY or street rights-of-way, shall be the responsibility of the CONTRACTOR as specified herein. The CONTRACTOR shall provide immediate notice to the CITY of any damage to fencing and provide temporary fencing as required to provide a functionally similar level of security.

The CONTRACTOR shall remove, protect, and replace all fences or other items encountered on public or private property. Before final payment will be authorized by the PROJECT MANAGER, the CONTRACTOR will be required to furnish the CITY with written releases from property owners or public agencies where side agreements or special easements have been made by the CONTRACTOR or where the CONTRACTOR's operations, for any reason, have not been kept within the construction right-of-way obtained by the CITY or the street right-of-way.

B. It is anticipated that the required easements and permits will be obtained before construction is started. However, should the procurement of any easement or permit be delayed, the CONTRACTOR shall schedule and perform the work around these areas until such a time as the easement or permit has been secured.

C. Prior to removing an existing structure or item, provide written notice to the CITY at least 14 days in advance of the anticipated removal.

PART 4 SAFETY AND CONVENIENCE

4.1 SAFETY AND ACCESS

A. The CONTRACTOR shall do all work necessary to protect the general public from hazards, including, but not limited to, surface irregularities or unramped grade changes in pedestrian sidewalk or walkway, and trenches or excavations in roadway. Barricades, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the work. All barricades and signs shall be clean and serviceable, in the opinion of the PROJECT MANAGER.

B. During construction, the CONTRACTOR shall construct and at all times maintain satisfactory and substantial temporary chain link fencing, solid fencing, railing, barricades or steel plates, as applicable, at all openings, obstructions, or other hazards in streets, sidewalks, floors, roofs, and walkways. All such barriers shall have adequate warning lights as necessary, or required, for safety. All lights shall be regularly maintained, and in a fully operational state at all times.

C. The CONTRACTOR shall notify all residences and businesses of planned construction at least 5 working days prior to the start of work in the block where they are located. Such notices shall be brochures or door-hangers with sufficient information to describe the extent and duration of the planned work. Notification activities shall be coordinated with the CITY .

D. Homeowners and business owners shall be provided reasonable access. The CONTRACTOR shall provide temporary sidewalks, bridges or driveway access, including safe passage over open excavations as required.

4.2 ACCIDENT REPORTS

A. In addition, the CONTRACTOR must promptly report in writing to the CITY all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of

witnesses. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the PROJECT MANAGER.

B. If a claim is made by anyone against the contractor or any subcontractor on account of any accident, the CONTRACTOR shall promptly report the facts in writing to the PROJECT MANAGER, giving full details of the claim.

4.3 SAFE ACCESS BY FEDERAL, STATE, AND LOCAL GOVERNMENT OFFICIALS

A. Authorized representatives of the state, federal, or local governmental agencies, shall at all times have safe access to the work, and the CONTRACTOR shall provide proper facilities for such access and inspection.

4.4 PROTECTION OF PROPERTY

A. Protect stored materials located adjacent to the proposed work. Notify property owners affected by the construction at least two business days in advance of the time construction begins. During construction operations, construct and maintain such facilities as may be required to provide access by all property owners to their property. No person shall be cut off from access to his residence or place of business for a period exceeding 2 hours, unless the CONTRACTOR has made special arrangements with the affected persons.

B. The CONTRACTOR shall identify and isolate his active work zone in such a manner as to exclude all personnel not employed by him, the PROJECT MANAGER, and the CITY

4.5 FIRE PREVENTION AND PROTECTION

A. The CONTRACTOR shall perform all work in a fire-safe manner. He shall supply and maintain on the site adequate fire-fighting equipment capable of extinguishing incipient fires. The CONTRACTOR shall comply with applicable federal, state, and local fire-prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) shall be followed.

4.6 ACCESS FOR POLICE, FIRE, AND POSTAL SERVICE

A. Notify the fire department and police department before closing any street or portion thereof. No closing shall be made without the CITY's approval of MOT plan. Notify said departments when the streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without special written permission from the fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access.

B. The CONTRACTOR shall leave a night emergency telephone number or numbers with the police department, and the PROJECT MANAGER, so that contact may be made easily at all times in case of barricade and flare trouble or other emergencies.

C. Maintain postal service facilities in accordance with the requirements of the U.S. Postal Service. Move mailboxes to temporary locations designated by the U.S. Postal Service, and at the completion of the work in each area, replace them in their original location and in a condition satisfactory to the U.S. Postal Service.

PART 5 PRESERVATION, RESTORATION, AND CLEANUP

5.1 SITE RESTORATION AND CLEANUP

A. At all times during the work, keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment and leave the project free of rubbish or excess materials of any kind.

B. Stockpile excavated materials in a manner that will cause the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences, regardless of whether these are on private property, or on state, county, or city rights-of- way. Remove all excavated materials from grassed and planted areas, and leave these surfaces in a condition equivalent to their original condition. Replace excavated areas as specified in Section 02315, BACKFILL, raked and graded to conform to their original contours.

5.2 FINISHING OF SITE, BORROW, AND STORAGE AREAS

A. Upon completion of the project, all areas used by the CONTRACTOR shall be properly cleared of all temporary structures, rubbish, and waste materials and properly graded to drain and blend in with the abutting property. Areas used for the deposit of waste materials shall be finished to properly drain and blend with the surrounding terrain. Grassed areas shall be restored as specified.

PART 6 PERMITS

6.1 GENERAL

A. Permits obtained by the CITY may include the following:

1. BCEPD: Collection/transmission system and pump station construction.
2. BCEPD: Environmental Permits, drainage and stormwater construction.
3. Broward County Engineering: Pre- approval has been obtained by the CITY. The CONTRACTOR shall obtain a construction permit for work in any Broward County rights-of-way.

B. Permits to be Obtained by the CONTRACTOR may include, but are not limited to the following:

1. CITY and County Building permits.
2. CITY, County, and State contracting licenses.
3. Tree removal and trimming permits.
4. BCEPD: Dewatering permit.

C. The CONTRACTOR shall comply with all applicable permit conditions. **For MOT Broward County permit approval the contractor shall ensure that he obtains preapproval from 1) Signal Design 2) Systems Communication 3) Schools/Traffic Calming and 4) Maintenance of Traffic**

D. For Broward County MOT permit submittal Contractor shall contact: Mr. Lei Cai, (954) 847-2653 or (954) 847-2600, 2300 W Commercial Boulevard, Fort Lauderdale, Florida 33309.

END OF SECTION

SECTION 01005
INTENT OF DRAWINGS AND SPECIFICATIONS

A. Intent of specifications and drawings is to cover an installation complete in every respect. It is not intended to give every detail on drawings and in specifications. The CITY will not be responsible for absence of any detail which the CONTRACTOR may require, nor for any special construction which may be found necessary as work progresses. If an item is either indicated or specified, it shall be considered sufficient for inclusion of said item in contract. The CONTRACTOR shall furnish and install materials and equipment usually furnished with such systems, and as needed to complete an operating installation, whether mentioned or not, which are customary to its trade.

B. Incidental accessories not usually shown or specified but which are necessary for the proper installation and operation shall be included in work without additional cost to the CITY the same as if herein specified.

C. Any apparatus, appliance, material or work not shown on but mentioned in the specifications, or vice versa, or any incidental accessories necessary to make the work complete and ready for operation, shall be furnished, delivered, and installed by the CONTRACTOR without additional cost to the CITY.

D. Drawings are diagrammatic and indicate the general arrangement of systems and work indicated (do not scale the drawings). Consult the CITY for exact locations of fixtures, appurtenances, etc., where these items are not definitely located on the drawings.

E. The CITY's interpretation of drawings and specifications shall be final and binding upon Contractor.

F. The CONTRACTOR shall visit site prior to submitting bid, and thoroughly investigate and verify all conditions under which work shall be performed.

END OF SECTION

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. The completed inspection, assessment and rehabilitation, and repair of stormwater infrastructure work will include, but is not limited to the following project components:

1. Stormwater lining, CCTV & trenchless technologies annual contract on an as-needed basis as provided by the Bid Schedule. As-needed stormwater utility inspection, assessment and rehabilitation or repair shall be specified in individual task orders.

2. CONTRACTOR shall restore sidewalks, curbs, trees, sod, sprinkler, signs, and other site elements damaged during construction that are outside of the Right-of-Way limits, at its own cost. Such restoration is considered incidental to the installation of stormwater restoration work.

3. CONTRACTOR shall coordinate with Broward County Traffic the restoration and replacement of Signs and Striping to meet regulatory requirements and engineering standards at the time the restoration takes place. Contractor shall be fully responsible with all compliance requirements by the applicable regulatory agencies.

4. CONTRACTOR shall retain the services of a certified independent soils and materials testing lab to provide all soils, concrete, asphalt, density and materials testing as required. Testing results shall be submitted to the ENGINEER for review and approval at the time the testing results are provided to the CONTRACTOR.

5. CONTRACTOR shall be responsible for maintaining up-to-date redline as-built drawings, on site, at all times during construction if required. All as-built information shall be surveyed and verified by a professional land surveyor registered in the State of Florida. CONTRACTOR shall provide the CITY with a minimum of three (3) sets of signed and sealed record drawings (final as-builts) and a CD of the electronic drawing files created in AutoCAD 2014 or later. All costs associated with survey work required for construction layout and as-built preparation shall be the responsibility of the CONTRACTOR.

6. CONTRACTOR shall submit all project documents via paper copy, email, thumb drive, and/or as directed by CITY. All formats must be properly labeled with the project number, date and submittal number.

B. Inspection, assessment and rehabilitation or repair all pipes includes, but is not limited to:

1. Traffic control (MOT) sequencing and re-sequencing of work, as needed, to provide continuous construction. Bypass pumping, as required, during construction activities.

2. Dewatering to be provided as required due to field conditions. Dewatering plans to be obtained by CONTRACTOR and approved by Broward County DEP, prior to construction.

3. Site restoration to a condition similar to what existed prior to pipe installation.

4. Compliance with applicable permits including but not limited to provisions under BCHD.

1.2 WORK NOT COVERED BY CONTRACT DOCUMENTS

A. Any associated work on any pipe line, manhole or catch basin not specifically identified in the contract documents or in writing by CITY.

1.3 CITY-FURNISHED ITEMS

None

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SEQUENCE OF WORK

A. Conduct preliminary CCTV inspection and pipe assessment before performing any pipe rehabilitation or replacement.

B. Perform all Work associated with rehabilitating or replacing indicated pipe segments.

C. All work associated with pipe rehabilitation or replacement on a specific pipe line segment shall be completed and tested by the CONTRACTOR and accepted by CITY.

D. Pipe cleaning shall be done no more than 48 hours prior to lining or other forms of rehabilitating the pipe.

E. Contractor is required to take extreme caution during pipe cleaning and use all means necessary to prevent damage to surface features and avoid pipe collapse.

F. Conduct post CCTV inspection and pipe assessment after performing any pipe rehabilitation or replacement.

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 GENERAL

CONTRACTOR shall submit applications for payment in accordance with City of Fort Lauderdale's construction agreement Article 7 – Payment Procedures.

1.1 SUBMITTALS

A. Informational:

1. Submit schedule on CITY's form.
2. Application for Payment.
3. Final Application for Payment.

[This Page Intentionally Left Blank]

SECTION 01040
COORDINATION

PART 1 GENERAL

1.1 SUBMITTALS

A. Informational:

1. Statement of Qualification (SOQ) for land surveyor or civil engineer.
2. Statement of Qualification (SOQ) for professional videographer.
3. Photographs:
   a. Color Prints: Submit two copies, accompanied by negatives or digital files, within 5 days of being taken.
   b. Video Recordings: Submit two copies within 5 days of being taken.

1.2 UTILITY NOTIFICATION AND COORDINATION

A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work.

1. Contact the City of Fort Lauderdale Public Services Department at 954-828- 8000 for water and sewer utility locations.
2. Contact Sunshine State One Call at 1-800-432-4770 at least 2 business days prior to any excavation.

B. If damage occurs, or if conflicts or emergencies arise during Work, contact the appropriate utility.

1. Electricity Company: Florida Power and Light.
   a. Contact Person: Trouble Center (or police/fire 911).
   b. Telephone: 954-797-5000.

2. Telephone Company: BellSouth.
   a. Telephone: 954-316-4005 or 954-605-1121.

3. Water and Sewer Department: Fort Lauderdale Public Services Department.
   a. Contact Person: Emergency Hotline.
   b. Telephone: 954-828-8000.

4. Gas Company: TECO Peoples Gas.
   a. Contact Person: Dispatch.
   b. Telephone: 305-957-3857 ext7490 or 877-832-6747

5. Telecom: AT&T – Broadband/Comcast.
   a. Contact: Vic Beninate
   b. Telephone: 954-801-4623
   c. vb2674@att.com

6. Telecom: FP&L FiberNet.
   a. Contact: Tom O'Hara,
   b. Telephone: 954-729-8410 ,

7. Broward County Traffic Engineering Division (For Traffic Signal Communications Systems Underground Cable):
   a. Contact: Tim Miller
   b. Telephone: 954-847-2761
   c. timmiller@broward.org

1.3 PROJECT MEETINGS

A. General:

1. CONTRACTOR: Schedule physical arrangements for meetings throughout progress of Work, prepare meeting agenda with PROJECT MANAGER, CITY and CONTRACTOR input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies minutes after each meeting to participants and parties affected by meeting decisions.

2. Representatives of PROJECT MANAGER, CITY, CONTRACTOR , and Subcontractors shall attend meetings as needed.

B. Preconstruction Conference:

1. CONTRACTOR shall be prepared to discuss the following subjects, as a minimum:
   a. Required schedules.
   b. Status of Bonds and insurance.
   c. Sequence of critical path work items.
   d. Project changes and clarification procedures.
   e. Use of site, access, office and storage areas, security and temporary facilities.
   f. Major project delivery and priorities.
   g. CONTRACTOR 's safety plan and representative.
   h. Progress payment procedures.

2. Attendees may include but not limited to:
   a. CITY's representatives
   b. PROJECT MANAGER's representatives
   c. CONTRACTOR 's office representative
   d. CONTRACTOR 's resident superintendent
   e. CONTRACTOR 's quality control representative
   f. Subcontractor's representatives whom Contractor may desire or Project Manager may request to attend.
   g. Engineer of Record's representatives.
   h. Others as appropriate.

C. Preliminary Schedules Acceptability Review Meeting: As required to review and finalize Preliminary Schedule.

D. Progress Meetings:

1. PROJECT MANAGER will schedule regular progress meetings at site, conducted weekly to review Work progress, progress schedule, Shop Drawing and Sample submissions schedule, Application for Payment, contract modifications, and other matters needing discussion and resolution.

2. Attendees will include:
   a. CITY's representatives, as appropriate.
   b. PROJECT MANAGER, as appropriate.
   c. CONTRACTOR, Subcontractors and Suppliers, as appropriate.
   d. Engineer of Record 's representative(s).
   e. Others as appropriate.

3. On a monthly basis, the Project Manager will conduct a meeting to review work completed the previous month versus the Progress Schedule, work planned for upcoming month based on the Progress Schedule, the monthly Application for Payment, and any outstanding issues related to performance of the Work including pending contract modifications, requests for clarification, Shop Drawings, etc. All parties will attend the monthly meeting.

E. Pre-installation Meetings:

1. When required in individual Specification sections or as necessary to coordinate the Work, convene at site prior to commencing Work of that section.

2. Require attendance of entities directly affecting, or affected by, Work of that section.

3. Notify PROJECT MANAGER four (4) days in advance of meeting date.

4. Provide a suggested agenda to PROJECT MANAGER to include reviewing conditions of installation, preparation and installation or application procedures, and coordination with related Work and work of others.

F. Other Meetings: In accordance with the Contract Documents and as required by the CITY.

1.4 FACILITY OPERATIONS

A. Continuous operation of CITY's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate

continuously, unless otherwise specified.

B. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of CITY's operations.

C. When necessary, plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items to maintain continuous operations of CITY's facilities.

D. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems, except as specifically required by the Contract Documents and after authorization by CITY. Such authorization will be considered within 48 hours after receipt of CONTRACTOR's written request.

E. Provide **7** days advance written request for approval of need to shut down a process or facility to PROJECT MANAGER.

F. Power outages will be considered upon 48 hours written request to PROJECT MANAGER. Describe the reason, anticipated length of time, and areas affected by the outage. Provide temporary provisions for continuous power supply to critical facility components.

G. Do not proceed with Work affecting a facility's operation without obtaining CITY's and PROJECT MANAGER's advance approval of the need for and duration of such Work.

H. Relocation of Existing Facilities:

1. During construction, it is expected that minor relocations of Work will be necessary.
2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.
3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
4. Perform relocations to minimize downtime of existing facilities.
5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by PROJECT MANAGER.

1.5 PHYSICAL CONDITIONS

A. Exercise reasonable care to verify locations of existing subsurface structures and underground facilities.

B. Thoroughly check immediate and adjacent areas subject to excavation by visual examination (and by electronic metal and pipe detection equipment, as necessary) for indications of subsurface structures and underground facilities.

C. Make exploratory excavations where existing underground facilities or structures may potentially conflict with proposed underground facilities or structures. Conduct exploratory excavations in presence of CITY and sufficiently ahead of construction to avoid possible delays to CONTRACTOR's Work.

1.6 ADJACENT FACILITIES AND PROPERTIES

A. Examination:

1. After Effective Date of the Agreement and before Work at site is started, CONTRACTOR , PROJECT MANAGER , and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation:

1. Record and submit documentation of observations made on examination inspections in accordance with paragraphs Construction Photographs and Audio-Video Recordings.
2. Upon receipt, CITY will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office.
3. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and CITY.

1.7 CONSTRUCTION PHOTOGRAPHS

A. Photographically document all unique portions of the construction including tie-ins to existing pipelines or facilities, crossings of existing utilities, buried valve and piping intersections, and other work items that will not otherwise be visible after completion of construction.

B. Film or file handling and development shall be done by a commercial laboratory.

C. PROJECT MANAGER or Engineer of Record shall have the right to select the subject matter and vantage point from which photographs are to be taken.

D. Construction Progress Photos:

1. Photographically demonstrate progress of construction, showing

every aspect of site and adjacent properties as well as interior and exterior of new or impacted structures.

2. Monthly: Take 24 exposures using 35 mm color film or digital photographs of comparable quality, unless otherwise approved by the CITY.

E. Color Prints:

1. Minimum Size: 3-inch by 5-inch.

2. Finish: Glossy.

3. Label Each Print:
   a. Project Name.
   b. Date and time photo was taken.
   c. Photographer's name.
   d. Caption (maximum 30 characters).
   e. Location and area designation.
   f. Schedule activity number, as appropriate.

4. Assemble in bound albums in clear plastic sleeves that facilitate viewing both front and back of each photograph.

5. Assemble negatives in their corresponding album in clear plastic sleeves made for the purpose or on recordable CD media organized by project segment.

1.8 AUDIO-VIDEO RECORDINGS

A. Prior to beginning Work on construction site or of a particular area of the Work, and again within 10 days following date of Substantial Completion, video the construction site and property adjacent to construction site.

B. In the case of preconstruction recording, no Work shall begin in the area prior to PROJECT MANAGER's review and approval of content and quality of video for that area.

C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within pipeline alignment and areas adjacent to and within the right-of-way or easement, and on CONTRACTOR storage and staging areas.

D. CITY shall have right to select subject matter and vantage point from which videos are to be taken.

E. Videotaping shall be by a professional commercial videographer, experienced in shooting construction videos.

F. Video Format and Quality:

1. DVD format, with sound

2. Video:
   a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections.
   b. Electronically, and accurately display the month, day, year, and time of day of the recording.

3. Audio:
   a. Audio documentation shall be done clearly, precisely, and at a moderate pace.

   b. Indicate date, Project name, and a brief description of the location of taping, including:
      1. Facility name;
      2. Street names or easements;
      3. Addresses of private property; and
      4. Direction of coverage, including engineering stationing, if applicable.

G. Documentation:

1. Provide two copies to the CITY.

2. DVD Label:
   a. Disk number (numbered sequentially, beginning with 001)
   b. Project Name
   c. Name of street(s) or easement(s) included
   d. Applicable location by engineering stationing
   e. Date and time of coverage

3. Project Video Log: Maintain an ongoing log that incorporates above noted label information for DVD's on Project.

H. The Following Shall be Included with the Video Documentation:

1. Coverage is required within and adjacent to the rights-of-way, easements, storage, and staging areas where the work is being constructed

2. Documentation of the conditions of the adjacent properties or any affected structures as a result of the impending construction

3. Certification as to date work done and by whom

4. All videos shall be keyed to the construction drawings, provided with an index and a written narrative

I. Preconstruction and Post-Construction Videos Shall be Submitted as follows:

1. Preconstruction videos shall be presented to the CITY at the preconstruction conference.

2. Post-construction videos shall be submitted prior to final project closeout. This submittal is contingent to final payment.

J. Payment for the work in this Section will be included as part of the lump sum price for mobilization/demobilization.

1.9 REFERENCE POINTS, SURVEYS, AND RECORD DRAWINGS

A. Location and elevation of benchmarks are shown on Drawings.

B. CONTRACTOR Responsibilities:

1. Provide additional survey and layout required to layout the Work

2. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto

3. In event of discrepancy in data or benchmarks, request clarification before proceeding with Work

4. Retain professional land surveyor or civil engineer registered in state of Florida who shall perform or supervise engineering surveying necessary for additional construction staking and layout and obtaining record information for as-built and record drawing preparation

5. Maintain complete accurate log of survey Work as it progresses as a Record Document. The CONTRACTOR is responsible for the quality control of horizontal location and vertical elevations of the installed project

6. On request of the PROJECT MANAGER , submit documentation

7. Provide competent employee(s), tools, stakes, and other equipment and materials as PROJECT MANAGER may require to:

a. Establish control points, lines, and easement boundaries.
b. Check layout, survey, and measurement Work performed by others.
c. Measure quantities for payment purposes.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CUTTING, FITTING, AND PATCHING

A. Cut, fit, adjust, or patch Work and work of others, including excavation and backfill as required, to make Work complete.

B. Obtain prior written authorization of CITY before commencing Work to cut or otherwise alter:

1. Structural or reinforcing steel, structural column or beam, elevated slab, trusses, or other structural member.
2. Weather- or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Work of others.

C. Refinish surfaces to provide an even finish.

1. Refinish continuous surfaces to nearest intersection.
2. Refinish entire assemblies.
3. Finish restored surfaces to such planes, shapes, and textures that no transition between existing work and Work is evident in finished surfaces.

D. Restore existing work, Underground Facilities, and surfaces that are to remain in completed Work including concrete-embedded piping, conduit, and other utilities as specified and as shown.

E. Make restorations with new materials and appropriate methods as specified for new Work of similar nature; if not specified, use recommended practice of manufacturer or appropriate trade association.

F. Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces and fill voids.

G. Remove specimens of installed Work for testing when requested by CITY.

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.1 DEFINITIONS

A. Action Submittal: Written and graphic information submitted by CONTRACTOR, that requires CITY's approval.

B. Informational Submittal: Information submitted by CONTRACTOR, that does not require PROJECT MANAGER's approval. Submittals not meeting conditions of the Contract will be returned.

1.2 DOCUMENT CONTROL SYSTEM

A. The CONTRACTOR shall use industry standard software applications to manage construction activities and submittals.

B. The CONTRACTOR shall provide document control submittal summaries as part of regular submittals in order to document such information provided to the City.

C. The CONTRACTOR shall use industry standard software applications to properly track and categorize submittals.

D. The CONTRACTOR shall retain on file the original copies of scanned documents submitted through the Warranty period of the project. The original copied shall be made available to the PROJECT MANAGER upon request.

1.3 PROCEDURES

A. The CONTRACTOR shall prepare and submit select construction related correspondence, (transmittal, RFI's, proposals, etc.) to the PROJECT MANAGER. During the preconstruction meeting(s) the CONTRACTOR shall be instructed by the City of Fort Lauderdale PROJECT MANAGER on the details for submitting correspondence for this Contract.

B. Submittals containing material samples or which require original signature shall be directed to the PROJECT MANAGER at the following address, unless specified otherwise.

1. City of Fort Lauderdale, 100 North Andrews, 4th Floor, Fort Lauderdale, FL 33301
2.

C. Transmittal of Submittal:

1. CONTRACTOR Shall:
   a. Review each submittal with uniform approval stamp before submitting to PROJECT MANAGER

1) Stamp to include Project name, submittal number, Specification number, CONTRACTOR's reviewer name, date of CONTRACTOR's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with Contract Documents.
2) PROJECT MANAGER will not review submittals that do not bear CONTRACTOR's approval stamp and will return them without action.

2. Complete, sign, and transmit with each submittal package, one Transmittal of CONTRACTOR's Submittal form attached at end of this section.

3. Identify each submittal with the following:
   a. Numbering and Tracking System:
      1) Sequentially number each submittal.
      2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
   b. Specification section and paragraph to which submittal applies.
   c. Project title and CITY's project number.
   d. Date of transmittal
   e. Names of CONTRACTOR, Subcontractor or Supplier, and manufacturer as appropriate.

4. Identify and describe each deviation or variation from Contract Documents.

D. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.

2. Package submittal information by individual specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in Specification.

3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, material, and devices, and compliance with Contract Documents.

4. Index with sections labeled and divided in an orderly manner.

E. Timelines: Schedule and submit in accordance with schedule of Shop Drawing and Sample submittals, and requirements of individual Specification sections.

F. Processing Time:

1. Time for review shall commence on PROJECT MANAGER's receipt of submittal.

2. PROJECT MANAGER will act upon CONTRACTOR's submittal and transmit response to CONTRACTOR not later than 21 days after receipt, unless otherwise specified.

3. Resubmittal will be subject to same review time.

4. No adjustments of Contract Times of Price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmittals.

G. Resubmittals: Clearly identify each correction or change made

H. Incomplete Submittals:

1. PROJECT MANAGER will return entire submittal for CONTRACTOR's revision if preliminary review deems it incomplete.

2. When any of the following are missing, Submittal will be deemed incomplete:
   a. CONTRACTOR's review stamp, completed and signed.
   b. Transmittal of CONTRACTOR's Submittal, completed and signed.
   c. Insufficient number of copies.

I. Submittals Not Required by Contract Documents:

1. Will not be reviewed and will be returned stamped "Not Subject to Review."

2. PROJECT MANAGER will keep one copy and return all remaining copies to CONTRACTOR.

1.4 ACTION SUBMITTALS

A. Prepare and submit Action Submittals required by individual Specification sections.

B. Shop Drawings:

1. Identify and Indicate:
   a. Applicable Contract Drawing and Detail number, products, units, and assemblies, and system or equipment identification or tag numbers.
   b. Equipment and Component Title: Identical to title shown on Drawings.
   c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
   d. Project-specific information drawn accurately to scale.

2. Manufacturer's Standard Schematic Drawing and Diagrams as follows:
   a. Modify to delete information that is not applicable to the Work.
   b. Supplement standard information to provide information specifically applicable to the Work.

3. Product Date: Provide as specified in individual Specification section

4. Foreign Manufacturers: When proposed, include the following additional information:

   a. Names and addresses of at least 2 companies that maintain technical service representative close to Project.
   b. Complete list of spare parts and accessories for each piece of equipment.

C. Samples:

1. Copies: Three (3), unless otherwise specified in individual Specification sections.

2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
   a. Manufacturer name
   b. Model number
   c. Material
   d. Sample Source

3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.

4. Full-size Samples:

   a. Size as indicated in individual Specifications section.
   b. Prepared from same materials to be used for the Work.
   c. Cured and finished in manner specified.
   d. Physically identical with product for proposed use.

D. Action Submittal Dispositions: PROJECT MANAGER will review, mark, and stamp as appropriate, and distribute marked-up copies as noted:

1. Approved:
   a. CONTRACTOR may incorporate product(s) or implement Work covered by submittal.
2. Approved as Noted:
   a. CONTRACTOR may incorporate product(s) or implement Work covered by submittal, in accordance with PROJECTS MANAGER's notations.
3. Partial Approval, resubmit as Noted:
   a. Make corrections or obtain missing portions, and resubmit.
   b. Except for portions indicated, CONTRACTOR may begin to incorporate product(s) or implement Work covered by submittal, in accordance with PROJECT MANAGER's notations.
4. Revise and Resubmit:
   a. CONTRACTOR may not incorporate product(s) or implement Work covered by submittal.
5. Not subject to Review: Information received is not required by contract.

1.5 INFORMATION SUBMITTALS

A. General:

1. Refer to individual Specification sections for specific submittal requirements.

2. PROJECT MANAGER will review each submittal. If submittal meets conditions of the Contract, PROJECT MANAGER will forward copies to

appropriate parties. If PROJECT MANAGER determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, PROJECT MANAGER will provide review comments to the CONTRACTOR, and require that the submittal be corrected and resubmitted.

B. Application for Payment: In accordance with Section 01025, Measurement and Payment.

C. Certificates:

1. General:

a. Provide notarized statement that includes signature of entity responsible for preparing certification.
b. Signed by officer or other individual authorized to sign documents on behalf of that entity.

2. Welding: In accordance with individual Specification sections.

3. Installer: Prepare written statements on manufacturer's letterhead certifying that installer complies with requirements as specified in individual Specification sections.

4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual Specification section.

6. Manufacturer's Certificate of Compliance: In accordance with Section 01640, Manufacturers' Services.

7. Manufacturers Certificate of Proper Installation: In accordance with Section 01640, Manufacturers'' Services.

D. Construction photographs and video: In accordance with Section 01040, Coordination, and as may otherwise be required in Contract Documents.

E. Contract Closeout Submittals: In accordance with Section 01780, Contract Closeout.

F. Contractor-Design Data:

1. Written and graphic information.
2. List of assumptions.
3. List of performance and design criteria.
4. Summary of loads of load diagram, if applicable.
5. Calculations.

6. List of applicable codes and regulations.
7. Name and version of software.
8. Information requested in Individual Specification section.

G. Manufacturer's Instructions: Written of published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification sections.

H. Operation and Maintenance Date: As required in Section 01430, Operation and Maintenance Data.

I. Schedules:

1. Schedule of Shop Drawing and Sample Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01310 Progress Schedules.
   a. Show for Each, at a Minimum, the Following:
      1) Specification section number.
      2) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
      3) Estimated date of submission to PROJECT MANAGER, including reviewing and processing time.
   b. On a monthly basis, submit updated schedule to PROJECT MANAGER if changes have occurred or resubmittals are required.
2. Schedule of Values: In accordance with Section 01025, Measurement and Payment.
3. Schedule of Estimated Progress Payments: In accordance with Section 01310, Progress Schedules.
4. Progress Schedule: In accordance with Section 01310, Progress Schedules.

J. Special Guarantee: Supplier's written guarantee as required in individual Specifications sections.

K. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty subcontractor, trade, specialist, consultant, , install, and other professionals.

L. Submittals Required by Laws, Regulations, and Governing Agencies:

1. Submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
2. Transmit to PROJECT MANAGER for CITY's records one copy of correspondence and transmittals (to include enclosures and attachments) between CONTRACTOR and governing agency.

M. Test and Inspection Reports:

1. General: Shall contain signature of person responsible for test or report.

2. Factory:
   a. Identification of product and Specification section, type of inspection or test with referenced standard or code.
   b. Date of test, Project title and number, and name and signature of authorized person.
   c. Test Results.
   d. If test of inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
   e. Provide interpretation of test results, when requested by CITY.
   f. Other items as identified in individual Specification sections.

3. Field: As a minimum, include the following:
   a. Project title and number.
   b. Date and time.
   c. Record of temperature and weather conditions.
   d. Identification of product and Specification section.
   e. Type and location of test, sample, or inspection, including reference standard or code.
   f. Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
   g. If test of inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
   h. Provide interpretation of test results, when requested by CITY.
   i. Other items as identified in individual Specification sections.

N. Testing and Startup Date: In accordance with Section 01810, Equipment Testing and Facility Startup.

O. Training Date: In accordance with Section 01640, Manufacturers' Services.

1.6 CONTRACTOR CORRESPONDENCE

A. The CONTRACTOR shall submit selected construction related correspondence. During the Pre-construction meeting the CONTRACTOR shall be instructed by the City of Fort Lauderdale Project Construction Manager on the details of processing such documents for this Project.

B. The CONTRACTOR shall be required to track, at a minimum, the following documents.

1. RFI's
2. CCIR's
3. Daily Reports.

1.7 SUPPLEMENTS

A. The Supplement listed below, following "END OF SECTION" is part of this specification.

1. Forms: Transmittal of CONTRACTOR's Submittal.

1.8 PROGRESS PAYMENTS/REQUISITIONS FOR PAYMENT

A. The CONTRACTOR is responsible for creating the initial payment requisition. Each requisition shall be produced from updated progress data contained in the schedule and updated progress data. On a monthly basis, the CONTRACTOR

shall meet with the PROJECT MANAGER to discuss and agree on the progress of the work. Failure of the CONTRACTOR to maintain record documents and submit project schedule updates may result in a delay in procession monthly or final payment requisitions.

PART 2 PRODUCTS (NOT SED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

CITY OF FORT LAUDERDALE

All-America City

Submittal No.:_____

☐ New Submittal ☐ Resubmittal

Project:_____

Project No.: _____

Specification Section No.:_____

(Cover only one section with each transmittal)

Schedule Date of Submittal:

_____

TO: City of Fort Lauderdale

100 North Andrews, 4th Floor

Fort Lauderdale, FL 33301

Attn: Sayd Hussain, Project Manager II

FROM:_____

Contractor

_____

_____

_____

SUBMITTAL TYPE: ☐ Shop Drawing ☐ Sample ☐ Informational

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By:_____

Contractor (Authorized Signature)

SECTION 01320
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. CONTRACTOR's Construction Schedule.
2. Submittals Schedule.
3. Daily construction reports.
4. Field condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Float: The measure of leeway in starting and completing an activity.

1. Float time belongs to CITY.

1.3 SUBMITTALS

A. Submittals Schedule: Submit submittal schedule arranging the following in tabular format:

1. Scheduled date for first submittal.
2. Submittal category (action or informational).
3. Description of the Work covered.
4. Scheduled date for CITY's final release or approval.

B. CONTRACTOR's Construction Schedule: Submit initial schedule large enough to show entire schedule for entire construction period.

C. Daily Construction Reports: Submit copies at weekly intervals.

D. Field Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate CONTRACTORs.

B. Coordinate CONTRACTOR's Construction Schedule with the Schedule of Values, list of Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and CONTRACTOR's Construction Schedule.
2. Submit concurrently with the first complete submittal of CONTRACTOR's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
2. Submittal Review Time: Include review and resubmittal times indicated in Section 01300 "Submittals" in schedule. Coordinate submittal review times in CONTRACTOR's Construction Schedule with Submittals Schedule.
3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

B. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work included in each Work Order. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

   a. Preparation and processing of submittals.
   b. Mobilization and demobilization.
   c. Purchase of materials.
   d. Delivery.
   e. Installation.
   f. Work by CITY that may affect or be affected by CONTRACTOR's activities.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. Equipment at Project site.
2. Material deliveries.
3. High and low temperatures and general weather conditions.
4. Accidents.
5. Stoppages, delays, shortages, and losses.
6. Meter readings and similar recordings.
7. Orders and requests of authorities having jurisdiction.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. CONTRACTOR's Construction Schedule Updating: At weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute approved schedule to CITY, separate CONTRACTORs, testing and inspecting agencies, and other parties identified by CONTRACTOR with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction as required by laws and regulations and governing agencies.

2. Temporary Utility Submittals: Dewatering well locations

3. Temporary Construction Submittals:
   a. Dewatering facilities.
   b. Fencing and protective barrier locations and details.
   c. Staging area location plan.
   d. Maintenance of Traffic (MOT) Plans: As specified herein, and proposed revisions thereto.

1.2 MOBILIZATION

A. Mobilization shall include, but not be limited to, these principal items:

1. Obtaining required permits.

2. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.

3. Posting OSHA required notices and establishing safety programs and procedures.

4. Having CONTRACTOR's superintendent at site full time.

B. CONTRACTOR is responsible for finding suitable locations for project staging and material storage areas which shall be approved by CITY. CONTRACTOR shall be responsible for securing a temporary staging permit from the CITY and other approval authorities as appropriate.

1.3 PERMITS

A. Permits, Licenses, or Approvals: Obtain in accordance with the CITY's construction standards and Specifications and as otherwise required for completion of the Work.

1.4 PROTECTION OF WORK AND PROPERTY

A. Comply with CITY's safety rules while on CITY's project.

B. Keep CITY informed of serious onsite accidents and related claims.

1.5 VEHICULAR TRAFFIC

A. Maintenance of Traffic Plans (MOTs):

1. Adhere to MOTs reviewed and accepted by the CITY ENGINEER, and approved by the appropriate agency. Changes to this plan shall be made only by written approval of appropriate public authority and the CITY ENGINEER. Secure approvals for necessary changes so as not to delay progress of the Work.

2. Traffic Routing: In MOT, show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

3. Contractor shall provide steel sheets necessary to keep vehicular and pedestrian traffic in a safe manner.

B. Preparation of MOTs: CONTRACTOR shall be prepare and submit MOTs where required by federal, state, county, or local agencies having jurisdiction. CONTRACTOR shall obtain all required approvals and permits associated with the MOTs.

1. Traffic control on all city, county, and state highway rights-of-way shall meet the requirements of the City of Fort Lauderdale, where applicable, and the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, as well as FDOT standard details for maintenance of traffic, in accordance with the Manual for Uniform Traffic Control and Safe Practices.

2. Traffic control on all county rights-of –way shall meet the additional requirements of the Broward County Engineering Department including but not limited to:

a. Notification of intent to commence work activities in a county right-of- way shall be provided to the CITY ENGINEER no less than 10 business days prior to the start of construction.

b. The use of solid barriers to separate construction from adjacent traffic lanes where the difference in grade is greater

than 12 inches.

c. Plating or backfilling of all non-protected excavations at the close of each working day.

d. Broward County shall be named as an additional insured on Surety Bonds for any projects requiring work within County rights-of-way.

3. Temporary traffic control on City streets shall utilize barrels in lieu of folding barricades. CONTRACTOR is to provide a sample or detail of the proposed barrel to be used as part of the MOT submittal.

4. Traffic control on all FDOT or Broward County highways shall include flagmen during all periods of active construction.

5. CONTRACTOR shall submit copies of all MOT's to the CITY ENGINEER concurrent with submittal to the approving authority.

6. CONTRACTOR shall submit three copies of the agency-approved MOT prior to initiation of construction or as required by specific permits contained herein.

7. All MOTs shall be ATS certified.

1.6 PEDESTRIAN TRAFFIC

A. The "MAINTENANCE OF TRAFFIC" Plan, provided by the CONTRACTOR, shall include provisions for pedestrian and transit vehicular traffic where applicable. The following are minimum requirements:

The CONTRACTOR shall be responsible for providing a safe and adequate walking surface applicable to the Americans with Disabilities Act (ADA) for pedestrians. Safe walk routes for all pedestrians and transit users within the vicinity of the construction zone shall be maintained throughout construction. This includes safe walk routes/access to and from existing bus stops and transit vehicles. If the current walking surface and access to and from transit vehicles at bus stops cannot be maintained, then a temporary road-rock 4-foot walkway shall be created. The safe walk route shall be separated from the construction activity by the 4-foot high orange construction fence for the entire length of the Project or the length of the walk route, whichever is less.

1. Pedestrian walkways, bus stops and pedestrian access to transit vehicles should be maintained free of any obstructions and hazards such as holes, debris, mud, construction equipment, stored materials, etc. Any hazards near or adjacent to walkways, bus stops

and access to transit vehicles should be clearly delineated.

2. Where street closures do not allow access for scheduled garbage and refuse removal, the CONTRACTOR shall provide for moving residential containers to a suitable collection point on regular pick-up days.

3. Where safe pedestrian access/walkways cannot be provided, pedestrians should be directed to alternative routes by appropriate traffic control devices. Pedestrian, bicycle, and wheelchair traffic shall be guided and maintained (special attention is directed to the existing bus stop location access) using approved warning lights, signing, and channelization devices. Such control devices shall be installed and maintained in accordance with the MUTCD sections on work zone traffic control for pedestrians and Chapter 6D. Pedestrian and Worker Safety.

4. Where construction activities involve consecutive bus stops, access to and from all bus stops should be maintained. If access to and from all bus stops cannot be maintained, then a bus stop may be temporarily relocated or removed. However, no two consecutive bus stop shall be affected in this manner. If a stop requires temporary removal or relocation, then the Transit Superintendent at the Broward County Mass Transit Division, (954) 357-8381, should be notified 10 days prior to the occurrence so that appropriate notification can be completed by the Mass Transit Division.

5. It shall be the responsibility of the CONTRACTOR to install any necessary pavement, road rock, pavement marking and signage and/or any pedestrian signalization and/or signal modification to accommodate an existing or alternate walk route.

PART 2 PRODUCTS

2.1 PROJECT SIGN

A. Refer to sign detail located in the Supplement at the end of this Section.

B. Two signs required; placement at the direction of the CITY.

2.2 COMPUTER SOFTWARE, LATEST VERSIONS

A. Software requirements are valid for project use with or without an Engineer's

Field Office:

1. Microsoft Windows 7 Professional.

2. Microsoft Office Pro – latest version.
3. Scheduling: Spreadsheet format.
4. Microsoft Outlook.

PART 3 EXECUTION

3.1 TEMPORARY UTILITIES

A. Water:

1. Hydrant Water:

a. Is available from nearby hydrants. Secure written permission for connection, meter installation, and use from water department and meet requirements for use. Notify fire department before obtaining water from fire hydrants.

b. Use only special hydrant-operating wrenches to open hydrants. Make certain that hydrant valve is open full, since cracking the valve causes damage to the hydrant. Repair damaged hydrants and notify appropriate agency as quickly as possible. Hydrants shall be completely accessible to fire department at all times.

c. Include costs to connect and transport water to construction areas in Contract Price. The CONTRACTOR will be invoiced for water obtained from City hydrants.

B. Heating, Cooling, and Ventilating:

1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage due to temperature or humidity.

2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.

3. Pay all costs of installation, maintenance, operation, removal, and fuel consumed.

4. Provide portable unit heaters, complete with controls, oil or gas fired, and suitably vented to outside as required for protection of health and property.

5. If permanent natural gas piping is used for temporary heating units, do not modify or reroute gas piping without approval of utility company. Provide separate gas metering as required by utility.

C. Sanitary and Personnel Facilities: Provide and maintain facilities for CONTRACTOR's employees, sub-CONTRACTORs and all other on-site staff. Service, clean and maintain all facilities and enclosures.

D. Fire Protection: Furnish and maintain on site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

3.2 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property CITYs and the public.

2. No residence or business shall be cut off from vehicular traffic for a period exceeding 2 hours, unless special arrangements have been made.

3. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along line of the Work, unless other arrangements satisfactory to CITYs of said utilities have been made.

4. Where completion of the Work requires temporary or permanent removal and/or relocation of existing utility, coordinate all activities with CITY of said utility and perform all work to their satisfaction.

5. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.

6. Keep fire hydrants and water control valves free from obstruction and available for use at all times.

7. In areas where CONTRACTOR's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by CONTRACTOR.

8. Notify property CITYs and utility offices that may be affected by construction operation at least 5 working days in advance.

a. Before exposing a utility, obtain utility CITY's permission. Should service of utility be interrupted due to CONTRACTOR's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.

9. Do not impair operation of existing utility systems. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, storm drains, pump stations, or other sewer or stormwater structures.

10. Maintain original site drainage wherever possible.

B. Traffic Signal Communications Systems:

1. Maintain in continuous operation all existing traffic signal communication systems located within the Project limits for the duration of the Project. Maintenance of the traffic signal communication systems may entail the use of leased facilities, temporary splices, or the provision of alternate or replacement facilities as proposed by the CONTRACTOR and approved by the Broward County Traffic Engineering Division.

2. In the event of a failure in the continuous operation of the traffic signal communication system, prepare a Remedial Action Plan that has been coordinated with the Broward County Traffic Engineering Division to determine the nature of the failure. The Remedial Action Plan shall be documented in a written report and submitted within one calendar day of the notification of the discontinuous operation of the traffic signal communication system.

3. Complete the implementation of the Remedial Action Plan within two calendar days upon receipt of approval of the Plan by the Broward County Traffic Engineering Division. Reworking of the Plan shall be required if the minimum system communication requirements are not met, as determined by the Broward County Traffic Engineering Division, as a result of a given Remedial Action Plan.

4. In the event that the traffic signal communication systems are damaged, a temporary splice to a damaged copper communications cable shall be accomplished by using approved splice material for connecting the bare wires. For damaged fiber optic communication systems, mechanical splicing of the fiber to achieve a maximum loss of 0.20 dB is acceptable. A junction box shall be installed over the splice on a temporary basis for access, unless a new cable is installed as per specifications.

5. Any material furnished and installed for the replacement of existing traffic communications infrastructure shall meet Broward County standards. CONTRACTORs installing or repairing traffic communications infrastructure shall be approved by Broward County.

6. All traffic signal communication systems that were temporarily spliced shall be removed and replaced in kind with new cable, subject to approval by the Broward County Traffic Engineering Division, prior to final acceptance of the Project. Replacement shall be from junction box to junction box with no intermediate splices.

C. Site Security:

1. General – Code Yellow or Less:

a. All Sites: Provide and maintain temporary security fences as necessary to protect the Work and CONTRACTOR furnished products not yet installed.

b. Secure sites include, but are not limited to, water treatment plants, wastewater treatment plants, wellfields, water booster pump stations, storage facilities, and master lift stations.

c. All employees shall have a company or City provided photo identification badge to be worn at all times while on a secure project site.

d. Visitors shall be required to obtain daily visitor badges and vehicle access.

e. Obtain approval in writing from the CITY for work on secure sites outside of normal working hours. Approval must be available for inspection while working on the site after hours.

2. Code Orange Conditions for Work on Secure Sites:

a. The CONTRACTOR shall provide a list, to be updated weekly or whenever employees are added or removed, of all employees and subcontractor employees to be provided site access. Access for employees or visitors cannot be guaranteed and is subject to the discretion of security personnel.

b. All employees shall wear badges and sign-in daily.

c. The CONTRACTOR shall provide advance notice and coordinate with the CITY for screening and delivery of all materials and supplies, including FedEx, US Postal Service, UPS, and all general delivery items.

1) All packages for water treatment plant sites will be delivered through the central depot.

2) All packages shall have the name of a CONTRACTOR's employee stationed at the jobsite.

3) All delivery drivers shall have suitable photo identification and will be required to go through security procedures.

4) No delay claims will be allowed for failure to obtain clearance for deliveries or to delays associated with the above processes.

3. Code Red Conditions:

a. Work on secure sites will be stopped for the duration of code red conditions. No access by CONTRACTOR or subcontractor personnel will be permitted until clearance has been granted by the CITY.

b. The CONTRACTOR will be compensated for standby delay under code red conditions as provided in Section 00826, SPECIAL CONDITIONS.

D. Barricade and Lights:

1. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of CONTRACTOR's employees, other employer's employees, and others who may be affected by the Work.

2. Provide to protect existing facilities and adjacent properties from potential damage.

3. Locate to enable access by facility operators and property owners

4. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.

5. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.

E. Signs and Equipment:

1. Conform to requirements of manual published by the FDOT.

2. Barricades: Provide as required by the FDOT Vehicle Code and in sufficient quantity to safeguard public and Work. Use only approved barrels – collapsible barricades will not be permitted.

3. Portable TOW-AWAY-NO STOPPING Signs: Place where approved by police department and CITY.

4. Traffic Cones: Provide to delineate traffic lanes to guide and separate traffic movements.

5. High-Level Warning Flag Units: Provide two in advance of traffic approaching the Work, each displaying three flags mounted at a height of nine (9) feet.

6. ROAD CONSTRUCTION AHEAD Signs: Provide four, size 48 inches by 48 inches. Place in conspicuous locations, approximately 200 feet in advance of the Work, and facing approaching traffic.

7. DETOUR Signs: Provide two, right arrow or left arrow, placed as approved by the CITY ENGINEER.

8. RIGHT or LEFT LANE CLOSED AHEAD Signs: Provide two, place in advance of lane to be closed.

9. Provide at obstructions, such as material piles and equipment.

10. Illuminate barricades and obstructions with warning lights from sunset to sunrise.

11. Use to alert general public of construction hazards, which would include surface irregularities, unramped walkways, grade changes, and trenches or excavations in roadways and in other public access areas.

12. Submit proposed signage to the CITY ENGINEER for prior approval.

F. Existing Structures: Where CONTRACTOR contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with CONTRACTOR's operations, obtain approval of property owner, CITY ENGINEER. Replace those removed in a condition equal to or better than original.

G. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.

H. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

I. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection

works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.

3.3 TEMPORARY CONTROLS

A. Air Pollution Control:

1. Minimize air pollution from construction operations.

2. Burning: of waste materials, rubbish, or other debris will not be permitted on or adjacent to site.

3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust as needed up to daily, as directed by the CITY. Strictly adhere to applicable environmental regulations for dust prevention.

B. Noise Control:

1. Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels.

2. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments.

C. Water Pollution Control:

1. Divert flow interfering with construction and requiring diversion. Do not cause or permit action to occur which would cause an overflow to existing waterway.

2. Prior to commencing excavation and construction, obtain PROJECT MANAGER's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and stormwater flow, including dewatering pump discharges.

3. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, “Guidelines for Erosion and Sedimentation Control Planning,” and “Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity,” and “Erosion and Sediment Control-Surface

Mining in Eastern United States."

4. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

D. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period. Meet all local, state, and Federal requirements and obtain necessary permits and approvals as required. Discharges to storm drains, including discharge from dewatering systems, will not be permitted without the installation of a sediment removal system approved by the CITY.

3.4 STORAGE YARDS AND BUILDINGS

A. Coordinate requirements with Section 01600, MATERIAL AND EQUIPMENT.

B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.

C. Temporary Storage Buildings:

1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.

2. Arrange or partition to provide security of contents and ready access for inspection and inventory.

3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standards.

D. Storage and staging facilities are permitted on private property subject to the review and approval of the Planning and Zoning Department and the issuance of a permit under the provisions of Section 47-19.2 of the Unified Land Development Regulations.

1. Notice to Proceed will not be issued until the final approval is obtained.

2. Staging area sign requirements are provided at the end of this Section.

3.5 ACCESS ROADS AND DETOURS

A. Construct access roads as shown and within easements, rights-of-way, or Project limits. Utilize existing roads where shown. Alignments for new routes must be approved by CITY ENGINEER or CITY.

B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.

C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.

D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.

E. Coordinate with CITY ENGINEER detours and other operations affecting traffic and access. Provide at least 72 hours' notice to CITY ENGINEER of operations that will alter access to the site and adjacent private properties.

F. Where access road crosses existing fences, install and maintain gates.

G. Upon completion of construction, restore ground surface disturbed by access road construction to original grade. Replace damaged or broken culverts with new culvert pipe of same diameter and material.

3.6 PARKING AREAS

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, CITY's operations, or construction operations.

B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on CITY's existing paved areas, except as specifically designated for CONTRACTOR's use.

3.7 VEHICULAR TRAFFIC

A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.

B. For Project Sections that Pass through a Broward County School Zone:

1. No work is permitted in a school zone while school is in session.

2. CONTRACTOR shall plan work accordingly – no delay time will be granted to comply with this requirement.

C. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.

1. No two adjacent roadways can be under construction at the same time.

D. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.

E. Road Closures: Maintain satisfactory means of exit for persons residing or having occasion to transact business along route of the Work. If it is necessary to close off roadway or alley providing sole vehicular access to property for periods greater than 2 hours, provide written notice to each CITY so affected 5 days prior to such closure. In such cases, closings of up to 4 hours may be allowed. Closures of up to 10 hours may be allowed if a week's written notice is given and undue hardship does not result.

F. CONTRACTOR will submit MOT forms and/or applications as required by the agency with jurisdiction. The Temporary Modification of Traffic Form provided as a supplement to this Section shall be submitted to the CITY ENGINEER for <u>all</u> requested MOT's in accordance with the provisions of this Section. The form is required for MOT's in streets under City jurisdiction.

G. Maintenance of traffic is not required if CONTRACTOR obtains written permission from CITY and tenant of private property, or from authority having jurisdiction over public property involved, to obstruct traffic at designated point.

H. In making street crossings, do not block more than one-half the street at a time. Whenever possible, widen shoulder on opposite side to facilitate traffic flow. Provide temporary surfacing on shoulders as necessary.

I. When flaggers and guards are required by regulation or when deemed necessary for safety, furnish them with approved orange wearing apparel and other regulation traffic control devices.

J. Notify fire department and police department before closing street or portion thereof. Notify said departments when streets are again passable for emergency vehicles. Do not block off emergency vehicle access to

consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without written permission from fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. Furnish CONTRACTOR's night emergency telephone numbers to police department.

K. Move mailboxes to temporary locations accessible to postal service, and on completion of Work in each area, replace them in their original location and in a condition equal to or better than original.

L. Remove or relocate barricades on designated trash collection days to allow access for trash pickup. If access is completely blocked, the CONTRACTOR shall move the affected trash containers to an accessible location and return them after pickup. Mark each container to ensure return to the proper location.

M. Temporary Bridges:

1. Construct temporary bridges at all points where maintenance of traffic across pipeline construction is necessary.

2. Make bridges over public streets, roads, and highways acceptable to authority having jurisdiction thereof.

3. Bridges erected over private roads and driveways shall be adequate for service to which they will be subjected.

4. Provide substantial guardrails and suitably protected approaches.

5. Provide foot bridges not less than 4 feet wide with handrails and uprights of dressed lumber.

6. Maintain bridges in place as long as conditions of the Work require their use for safety of public, except that when necessary for proper prosecution of the Work in immediate vicinity of bridge. Bridge may be relocated or temporarily removed for such period as CITY may permit.

N. Detours: Where authority having jurisdiction requires that traffic be maintained over construction work in a public street, road, or highway, and traffic cannot be maintained on original roadbed or pavement, construct and maintain detour around the Work.

O. Coordinate traffic routing with that of others working in same or adjacent areas.

3.8 CLEANUP PROCEDURES FOR HURRICANE WARNINGS AND WATCHES

A. In the event that the National Oceanographic and Atmospheric Administration (NOAA) issues a hurricane watch for the Fort Lauderdale area, the PROJECT MANAGER will contact the CONTRACTOR informing him that the watch has been established. Once notified of a hurricane watch, the CONTRACTOR will remove all unnecessary items from the work area and tie down all remaining supplies, barricades, and movable (under 200 pounds) objects. The PROJECT MANAGER will determine "necessary" items. If a warning is issued, the CONTRACTOR shall complete the clean-up and evacuate the area the same day. The CITY shall not be liable for any costs or delays caused as a result of demobilization or remobilization due to the above.

3.9 CLEANING DURING CONSTRUCTION

A. In accordance with General Conditions, as may be specified in Specification sections, and as required herein.

B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.

C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.

D. Thoroughly clean all spilled dirt, gravel, or other foreign material caused by the construction operations from all streets and roads at the conclusion of each day's operation. Sidewalks, unless under construction, shall be kept clear of material, and available for pedestrian use at all times.

3.10 PROJECT SIGNS

A. Provide two project signs, painted and mounted as shown on the Drawings and in the following section, at locations to be determined by the CITY or ENGINEER.

3.11 SUPPLEMENTS

A. The supplements listed below, following “END OF SECTION,” are part of this Specification.

1. Supplement 2, Staging Area Sign Detail.
2. Supplement 3, MOT Routing Form.

3. Supplement 4, Door Hanger Notification Template.

3.12 VESSEL TRAFFIC CONTROL

A. CONTRACTOR shall provide the necessary protection devices per DEP and USACE regulations to maintain the safety and mobility of all vessels and marine watercraft as necessary in case the work requires set up of equipment (barge or other) at canals and waterways.

B. CONTRACTOR shall consult the PROJECT MANAGER for City provisions for all work in canals and waterways, including MOT, pollution control and navigation safety regulations.

END OF SECTION

STAGING PERMIT ORDINANCE

GG. *Construction staging areas.* The staging of public purpose construction projects including but not limited to the construction of public rights-of-way, utilities and facilities, may be permitted in all zoning districts as a temporary use, in order to allow for the safe, efficient completion of the project with minimal disruption to existing residents, businesses, and traffic, and to ensure that public services and facilities are available. Construction staging shall include the parking, placing and storing of construction materials, vehicles, equipment and support facilities required for the construction of a public project. Construction staging areas shall be permitted subject to the following review processes and conditions:

1. Application.
An application shall, in addition to the requirements provided in *Sec. 47-24*, Development permits and procedures, include the following:

a. A description and sketch dimensioned to scale of the subject property proposed to be used as a construction staging area and a description of the proposed use of the area, including such information as the location and type of construction materials, equipment, support facilities, vehicles, trailers or other construction equipment, storage areas for materials, traffic circulation plan to and from the site, access to the site, location, type of materials and details of any required fencing.

b. A sketch of the proposed site signage, including all contact information; and the proposed location of the sign.

c. The time required to complete the public construction project.

d. **A statement signed by the property owner acknowledging that the property owner consents to the temporary use of the property for construction staging as provided in the temporary construction permit application and that the property owner shall be held responsible for the removal of construction staging materials and debris if the applicant fails to do so upon termination of the temporary public purpose construction staging permit.**

2. *Standards.*
a. A fence of a material, design, and construction that meets building code requirements and precludes visibility through the fence, except for openings necessary for safety, shall be erected around the perimeter of the site. The fence shall have a minimum height of six (6) feet and a maximum height of ten (10) feet; such height to be determined as part of the site plan level I permit based on what height is necessary to protect adjacent properties.

b. The site shall be posted with a sixteen (16) square foot sign clearly visible from a right-of-way identifying the project by name, the name of the contractor, and the engineer responsible for construction management, and a phone number where the applicant or its representative can be contacted on a twenty-four-hour basis.

c. Movement of vehicles, storage materials or other activities at the site shall be limited to the hours of 7:30 a.m. to 5:30 p.m. Monday through Friday, unless otherwise specifically approved as provided in the site plan level I permit.

d. Movement of vehicles, storage materials or other activities at the site shall be limited to the hours of 7:30 a.m. to 5:30 p.m. Monday through Friday, unless otherwise specifically approved as provided in the site plan level I permit.

e. Construction staging at the site shall be limited to the activities approved as part of the site plan level I permit and no other activities shall be permitted except as approved by amendment of the site plan level I permit.

f. Conditions of approval may be imposed if necessary to mitigate the impact on adjacent property such as temporary paving, landscaping, and watering, all in accordance with engineering standards.

g. A termination date for the temporary construction permit shall be established by the department based on the information provided by the applicant, but an extension of such termination date may be granted if good cause is shown by filing an amendment to the site plan level I permit.

3. *Review process.*

a. Approval of a site plan level I permit as described in Sec. 47-24.2.

b. In addition to the review process applicable to a site plan level I permit, the application shall be forwarded to and reviewed by the city's public services department and the property and right-of-way committee.

c. A recommendation from the city's public services department and the property and right-of-way committee shall be forwarded to the department and included as part of the review of the site plan level I application.

4. *Review criteria.* In addition to the review criteria for a site plan level I permit, the following shall apply:

a. The proposed plan meets the standards provided in this Sec. 47-19.2; and

b. The plan includes measures to insure there is minimal disruption to existing residents, businesses and traffic in the area.

5. *Effective date of approval.* The approval of a temporary construction staging area application by the department shall not take effect nor shall a permit be issued any sooner than thirty (30) days after approval and then only if no motion is adopted by the city commission seeking to review the application or no appeal is filed as provided in Sec. 47-26B., Appeals.

6. *Appeal.* If a temporary construction staging permit is denied or is approved with conditions unacceptable to the applicant, the applicant may appeal the decision in accordance with the procedures provided in Sec. 47-26B., Appeals.

7. If, during the course of the construction of the public purpose construction project it is found that activities on the construction staging area site are detrimental to the health, safety and welfare of the public as determined by the City Engineer, the applicant shall be

given notice of additional measures that must be taken in order to mitigate the negative impact. If the applicant fails to institute such measures within five (5) calendar days of notice, notice shall be given of a hearing to be held before the city commission and applicant shall be required to address the impacts associated with the staging area site. If the city commission finds that negative impacts exist, it may impose conditions on the construction staging permit. If the applicant fails to demonstrate how the negative impacts will be mitigated or fails to institute the measures within the time required by the city commission, the city commission may terminate the permit.

8. *Termination of permit.* The temporary construction staging permit shall terminate on the date established by the department or the city commission as provided in this subsection GG.

Upon termination of a temporary construction staging permit the site applicant or property owner shall have thirty (30) days from termination to restore the site to a clean and safe condition with all construction staging materials and debris removed.

Stormwater Lining, CCTV & Trenchless
Technologies Annual Contract PROJECT NO. 12210

TEMPORARY MODIFICATION OF TRAFFIC (MOT) ROUTING FORM

DATE:

CONTRACTOR: PERMIT NO. _____

_____ (ENGINEERING OR BUILDING)

_____

Phone: _____
Fax: _____ PROJECT NAME:_____
E-mail: _____

This form represents request from the above named contractor for permission to temporarily modify City of Fort Lauderdale's existing traffic circulation to perform work under the above referenced Engineering or Building Permit within the City's right-of-way.

Brief description of work including location of site, reason for requiring a traffic modification, limits of work (description of work zone) shall be provided below. Refer to additional sheets to be attached (if necessary).

_____
_____
_____
_____

Brief description of temporary traffic modifications (include types of traffic control devices, the time duration for work zone placement, and any other special considerations related to this request. Refer to attached additional sheets (if necessary)

_____
_____
_____
_____

ATTACH: MAINTENANCE OF TRAFFIC PLAN PREPARED BY CERTIFIED WORKSITE TRAFFIC TECHNICIAN

It is to be understood that the granting of said permission is for temporary period only and can be rescinded at any time, following reasonable notice, that said permission causes or creates any unforeseen problems. Additional measures, devices, or requests may be presented to the Contractor for placement after receipt of the original approval if unforeseen traffic or pedestrian safety concerns are apparent.

All traffic control associated with construction within the City's right-of-way shall be in accordance with provisions of Part IV of the Manual of Uniform Traffic Control Devices for Streets and Highways. Compliance with the requirements of the approved plan shall be the responsibility of the Engineering Contractor.

_____ _____
(for the Contractor) (Name/Title-Print)

As a consideration for the permission granted herein, _____(Contractor) agrees to indemnify and hold harmless the City of Fort Lauderdale for any damages, claims or injuries that may result from the temporary traffic modification described herein.

_____ By: _____
(Name of Company) (Company Officer, President, or Authorized Agent)

The Engineering Department – Permits Section will authorize implementation of the traffic modifications only after review and approval by the following parties:

Approved: PROJECT NAME: _____

_____ (Date)	_____ Police Department (Patrol Secy. Office) 1300 West Broward Boulevard Fax to 954-828-5613 or Call for Appointment 954-828-5477
_____ (Date)	_____ Fire-Rescue Department Keith Allen, Deputy Chief - Fire Operations 101 NE 3 Avenue, Suite 500 Fax to 954-828-6843 or Call for Appointment 954-828-6813
_____ (Date)	_____ Broward County Traffic Engineering (BCTE) Steven Hessler Planning and Design Section 2300 W. Commercial Boulevard Fax to 954-497-3640 or call 954-484-9600, Ext. 249 or 251
_____ (Date)	_____ City Engineering Design Manager - TRAFFIC SECTION Helsop Daley Engineering Dept. – Traffic Engineering Section 100 North Andrews Avenue, 4th Floor (City Hall) Fax to 954-828-5074 or call 954-828-5734/5078
_____ (Date)	_____ City Engineering Design Manager – PERMITS SECTION Alex Scheffer P.E., Land Development Manager Engineering Department-Permits Section 700 N.W. 19th Avenue Tel: 954-828-5123/5048 fax: 954-828-4358

Upon execution a copy of this application and attached Maintenance of Traffic Plan is to be maintained on site with other permit documents.

ATTACHMENT: Maintenance of Traffic Plan prepared by Certified Work Site Traffic Technician

Note: This form is to be utilized to coordinate review and approval of traffic modifications required to facilitate construction in conjunction with Building & Engineering Permits. Traffic modifications required in conjunction with City projects should be coordinated by Engineering Inspection, or the Project Manager. Traffic modifications required for other reasons (e.g., special events) should be arranged through the City's Special Events Coordinator: Susan Molnar, 761-5362.

M:/ROWpermitting/MOTform/Rev. 08/15/01)

[CONTRACTOR'S NAME] [CONTRACTOR'S STREET ADDRESS] [CONTRACTOR'S CITY, STATE AND ZIP]
[CONTRACTOR'S TELEPHONE NUMBER]
[CONTRACTOR'S FAX NUMBER]

MEMORANDUM

TO: **RESIDENTS OF [LOCATION OF CONSTRUCTION]**

DATE: **[CURRENT DATE]**

RE: **CONSTRUCTION IN YOUR AREA**

FROM: **[CONTRACTOR'S NAME]**

Construction in your area will commence on [date of construction commencement]. The construction area is from [boundary #1] to [boundary #2].

Access to the area will be limited at certain times due to the construction activities. We apologize for any inconvenience and we will do our best to accommodate access to residents.

Thank You,

[Contractor Name]

SECTION 01590 – PROJECT SIGN

PART 1 GENERAL

CONTRACTOR shall furnish and install a **4' x 8'** sign (with white painted posts) prior to start of construction. A sample sign template is below but is not specific to the Project. The exact style and design of the sign will be provided by the CITY to the CONTRACTOR during the preconstruction meeting in PDF format.

END OF SECTION

Construction Sign Request Form

Title (Bold):

Title (Not Bold):

What's Happening?

Benefits:

Number of Neighbors Benefitted:

Cost:

Month and Year of Expected Completion:

Contractor:

Phone: 954-828-8000

We're Working On:

Project Manager Signature

Date

Senior Project Manager Signature

Date

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 DEFINITIONS

A. Products:

1. New items for incorporation in the Work, whether purchased by CONTRACTOR or CITY for the Project, or taken from previously purchased stock and may also include existing materials or components required for reuse.

2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.

3. Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.2 DESIGN REQUIREMENTS:

A. Provide systems, equipment, and components, including supports and anchorage in accordance with provisions of latest edition of the Florida Building Code. Wing: 150 mph, with exposure condition and an importance factor of 1.5.

1.3 ENVIRONMENTAL REQUIREMENTS

A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at 0 – 25 feet above sea level.

B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 30 degrees F to 110 degrees F.

1.4 PREPARATION FOR SHIPMENT

A. When practical, factory- assemble products. Mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.

B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and CONTRACTOR, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.

C. Extra Materials, Special Tools, Test Equipment, and Expendables:

1. Furnish as required by individual Specifications.

2. Schedule:
   a. Ensure that shipment and delivery occurs concurrently with shipment of associated equipment.
   b. Transfer to CITY shall occur immediately subsequent to CONTRACTOR's acceptance of equipment from Supplier.

3. Packaging and Shipment:
   a. Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.
   b. Prominently Displayed on Each Package, the Following:
      1) Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.
      2) Applicable equipment description.
      3) Quantity of parts in package.
      4) Equipment manufacturer.

4. Deliver Materials to the Following Address: CMS, 4250 NW 10th Ave., Fort Lauderdale, FL 33309

5. Notify PROJECT MANAGER upon arrival.

6. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to CITY.

D. Request a minimum 7-day advance notice of shipment from manufacturer. Upon receipt of manufacturer's advance notice of shipment, promptly notify PROJECT MANAGER of anticipated date and place of arrival.

E. Factory Test Results: Reviewed and accepted by PROJECT MANAGER before product shipment as required in individual Specification sections.

1.5 DELIVERY AND INSPECTION

A. Deliver products in accordance with accepted current progress schedule and coordinate to avoid conflict with the Work and conditions at site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.

B. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable. Include UL labels on products so specified.

C. Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products at site. Inspect for completeness and evidence of damage during shipment.

D. Remove damaged products from site and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

1.6 HANDLING, STORAGE, AND PROTECTION

A. Handle and store products in accordance with manufacturer's written instructions and in a manner to prevent damage. Store in approved storage yards or sheds provided in accordance with Section 01500, CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by CITY.

B. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.

C. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 degrees F. Protect electrical, instrumentation, and control products, and insulation against moisture, water, and dust damage. Connect and operate continuously all space heaters furnished in electrical equipment.

D. Store fabricated products above ground on blocking or skids, and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

E. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.

F. Hazardous Materials: Prevent contamination of personnel, storage building, and site. Meet requirements of product specification, codes, and manufacturer's instructions.

PART 2 PRODUCTS

2.1 GENERAL

A. Provide manufacturer's standard materials suitable for service conditions, unless otherwise specified in the individual Specifications.

B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.

C. Like items of products furnished and installed in the Work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.

D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

E. Provide interchangeable components of the same manufacturer, for similar components, unless otherwise specified.

F. Equipment, Components, Systems, Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, state, and local health and safety regulations.

G. Regulatory Requirement: Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.

H. Safety Guards: Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated 1/2-inch mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.

I. Provide materials and equipment listed by UL wherever standards have been established by that agency.

J. Equipment Finish:

1. Provide manufacturer's standard finish and color, except where specific color is indicated.
2. If manufacturer has no standard color, provide equipment with finish as approved by CITY.

K. Special Tools and Accessories: Furnish to CITY, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts as required for maintenance.

2.2 FABRICATION AND MANUFACTURE

A. General:

1. Manufacture parts to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
3. Modify standard products as necessary to meet performance Specifications.
4. Use ¼-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
5. Modify standard products as necessary to meet performance Specifications.

2.3 SOURCE QUALITY CONTROL

A. Where Specifications call for factory testing to be witnessed by CITY, notify CITY not less than 14 days prior to scheduled test date, unless otherwise specified.

B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).

C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing such effects. Remove damaged material or equipment from the site and expedite delivery of identical new material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays within CONTRACTOR's control.

3.2 INSTALLATION

A. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.

B. Handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's instructions, and as may be specified. Retain a copy of manufacturers' instruction at site, available for review at all times.

3.3 FIELD FINISHING

A. In accordance with individual Specification sections.

END OF SECTION

SECTION 01640
MANUFACTURERS' SERVICES

PART 1 GENERAL

1.1 DEFINITIONS

A. Person-Day: One person for 8 hours within regular CONTRACTOR working hours.

1.2 SUBMITTALS

A. Informational Submittals:

1. Training Schedule: Submit not less than 21 days prior to start of equipment installation and revise as necessary for acceptance.
2. Lesson Plan: Submit proposed lesson plan not less than 21 days prior to scheduled training and revise as necessary for acceptance.

1.3 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system, with full authority by the equipment manufacturer to issue the certifications required of the manufacturer. Additional qualifications may be specified elsewhere.

B. Representative subject to acceptance by CITY. No substitute representatives will be allowed unless prior written approval by such has been given.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

A. Furnish manufacturers' services when required by an individual Specification section to meet the requirements of this Section.

B. Where time is necessary in excess of that stated in the specifications for manufacturers' services, or when a minimum time is not specified, the time required to perform the specified services shall be considered incidental.

C. Schedule manufacturer’ services to avoid conflict with other onsite testing or other manufacturers’ onsite services.

D. Determine, before scheduling services, that all conditions necessary to allow successful testing have been met.

E. Only those days of service approved by CITY will be credited to fulfill the specified minimum services.

F. When specified in individual Specification sections, manufacturer's onsite services shall include:

1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of CONTRACTOR's assembly, erection, installation or application procedures.

2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.

3. Providing, on a daily basis, copies of all manufacturers' representatives' field notes and data to PROJECT MANAGER.

4. Revisiting the site as required to correct problems and until installation and operation are acceptable to CITY.

5. Resolution of assembly or installation problems attributable to, or associated with, respective manufacturer's products and systems.

6. Assistance during functional and performance testing, and facility startup and evaluation.

7. Training of CITY's personnel in the operation and maintenance of respective product as required.

8. Additional requirements may be specified elsewhere.

3.2 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

A. When specified in individual Specification section, submit prior to shipment of product or material.

B. CITY may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.

C. Signed by product manufacturer certifying that product or material specified conforms to or exceeds specified. Attach supporting reference data, affidavits, and certifications as appropriate.

D. May reflect recent or previous test results on material or product, if acceptable to CITY.

3.3 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

A. When so specified, a Manufacturer's Certificate of Proper Installation form, a copy of which is attached to this Section, shall be completed and signed by the equipment manufacturer's representative.

B. Such form shall certify that the signing party is a duly authorized representative of the manufacturer, is empowered by the manufacturer to inspect, approve, and operate their equipment and is authorized to make recommendations required to assure that the equipment is complete and operational.

3.4 TRAINING

A. General:

1. Furnish manufacturers' representatives for detailed classroom and hands-on training to CITY's personnel on operation and maintenance of specified product (system, subsystem, and component) and as may be required in applicable Specifications.

2. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with CITY, and familiar with operation and maintenance manual information.

3. Manufacturer's representative shall be familiar with facility operation and maintenance requirements as well as with specified equipment.

4. Furnish complete training materials, to include operation and maintenance data, to be retained by each trainee.

B. Training Schedule:

1. List specified equipment and systems that require training services and show:
   a. Respective manufacturer.
   b. Estimated dates for installation completion.
   c. Estimated training dates.

2. Allow for multiple sessions when several shifts are involved.

3. Adjust schedule to ensure training of appropriate personnel as deemed necessary by CITY, and to allow full participation by manufacturers' representatives. Adjust schedule for interruptions in operability of equipment.

C. Lesson Plan: When specified, prepare for each required course, containing the following minimum information:

1. Title and objectives.

2. Recommended types of attendees (e.g., managers, engineers, operators, maintenance).

3. Course description and outline of course content.

4. Format (e.g., lecture, self-study, demonstration, hands-on).

5. Instruction materials and equipment requirements.

6. Resumes of instructors providing the training.

D. Pre-startup Training:

1. Coordinate training sessions with CITY's operating personnel and manufacturers' representatives**,** and with submission of operation and maintenance manuals**.**

2. Complete at least 14 days prior to beginning of facility startup.

E. Post-startup Training: If required in Specifications, furnish and coordinate training of CITY's operating personnel by respective manufacturer's representatives.

3.5 SUPPLEMENTS

A. The supplement listed below, following “END OF SECTION,” is part of this Specification.

1. Forms: Manufacturer's Certificate of Proper Installation.

END OF SECTION

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

CITY_____ EQPT SERIAL NO:_____

EQPT TAG NO:_____ EQPT/SYSTEM:_____

PROJECT NO:_____ SPEC. SECTION:_____

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

- ☐ Installed in accordance with Manufacturer's recommendations.
- ☐ Inspected, checked, and adjusted.
- ☐ Serviced with proper initial lubricants.
- ☐ Electrical and mechanical connections meet quality and safety standards.
- ☐ All applicable safety equipment has been properly installed.
- ☐ Functional tests.
- ☐ System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

  Note: Attach any performance test documentation from manufacturer.

Comments:

_____

_____

_____

_____

_____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date:_____, 20_____Manufacturer:_____

By Manufacturer's Authorized Representative: _____
(Authorized Signature)

SECTION 01780
CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SUBMITTALS

A. Informational Submittals:

1. Submit prior to application for final payment.
   a. Special Bonds, Special Guarantees, and Service Agreements.
   b. Consent of Surety to Final Payment.
   c. Releases or Waivers of Liens and Claims.
   d. Releases from Agreements.
   e. Final Application for Payment: Submit in accordance with procedures and requirements stated in Section 01025, MEASUREMENT AND PAYMENT.
   f. Extra Materials: As required by individual Specification sections.

B. Subcontractor Identification Form:

1. Submit form with final pay request.
2. Submit a separate form for each subcontractor used.
3. For Capital Improvement Projects, submit form along with final pay request to the Project Manager.
4. For is attached as a Supplement to this section.

1.2 RELEASES FROM AGREEMENTS

A. Furnish CITY written releases from property owners or public agencies where side agreements or special easements have been made, or where CONTRACTOR's operations have not been kept within the CITY's construction right-of-way.

B. In the Event CONTRACTOR is Unable to Secure Written Releases:

1. Inform PROJECT MANAGER of the reasons.
2. CITY or its representatives will examine the site, and CITY will direct CONTRACTOR to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
3. Should CONTRACTOR refuse to perform this Work, CITY reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require CONTRACTOR to furnish a satisfactory Bond in a sum to cover legal claims for damages.

4. When CITY is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if:
(i) CONTRACTOR's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate claims that CONTRACTOR has failed to fulfill terms of side agreement or special easement, or (ii) CONTRACTOR is unable to contact or has had undue hardship in contacting grantor.

PART 2 PRODUCTS (NOT USED) PART 3 EXECUTION

3.1 FINAL CLEANING

A. At completion of the Work along each pipe segment clean entire site or parts thereof, as applicable.

1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to CITY and CITY ENGINEER.
2. Broom clean exterior paved driveways and parking areas.
3. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
4. Rake clean all other surfaces.
5. Leave water courses, gutters, and ditches open and clean.

B. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

C. Meet all requirements of Section 02575, SURFACE RESTORATION.

3.2 SUPPLEMENTS

A. The supplements listed below; following “END OF SECTION” are parts of this Specification.

1. Subcontractor Identification Form

END OF SECTION

SUBCONTRACTOR IDENTIFICATION FORM

This form shall be completed by all City of Fort Lauderdale Prime Contractors who subcontracted out any portion of his/her City contract. The form shall be forwarded to the City of Fort Lauderdale's Public Services Department (Engineering and Architectural Services) with the prime contractor's final pay request. A separate form is to be completed and submitted for each subcontractor. Please telephone (954) 761-5057 or 761-5083, if you have any questions regarding this form.

1) CITY OF FORT LAUDERDALE PROJECT NO. 12210

2) PROJECT DESCRIPTION _____

3) SUB-CONTRACTOR ____

_____
Business Name

_____
Address

_____
Telephone & Fax Nos.

_____
Email Address/Company Wesbsite (if applicable)

4) SUBCONTRACTOR'S PRINCIPAL OFFICER _

5) CLASSIFICATION OF WORK SUBCONTRACTED OUT __

6) COST OF WORK SUBCONTRACTED OUT __

7) Please check the item(s) which properly identify the ownership status of the subcontractor's firm:

☐ Subcontractor firm is not a MBE or WBE

☐ Subcontractor firm is a MBE, as at least 51 percent is owned and operated by one or more socially and economically-disadvantaged individuals:

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic ☐ White

☐ Subcontractor firm is a WBE, as at least 51 percent is owned and operated by one or more women.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic ☐ White

8) **PRIME Contractor _____**

_____
NAME & TITLE OF PRIME CONTRACTOR'S REPRESENTATIVE COMPLETING THIS FORM (*Please Print*)

_____
(Telephone No.) *(Fax No.)* *(Email Address)*

SIGNATURE _____ **DATE**_____
Prime Contractor's Representative

SECTION 02134

CHEMICAL GROUTING PIPE LINER

PART 1 GENERAL

1.1 REQUIREMENTS

A. The work specified in this section includes all labor, materials, accessories, equipment and tools necessary for grouting and sealing of:

1. Leaks in defective joints or cracks that may affect the installation of the cured- in-place pipe liner.
2. Open holes or voids associated with root penetration.

1.2 REFERENCES

A. Section 02660 – ROOT REMOVAL

B. Section 02140 – CURED-IN-PACE PIPE LINER

1.3 SUBMITTALS

A. The CONTRACOR shall submit the following in accordance with Section 01300 SUBMITTALS:

1. A specimen product label showing the United States Environmental Protection Agency (EPA) registration number of the product.
2. Material Safety Data Sheets (MSDS) for the products
3. Grout, design mix, and testing reports.
4. Brand name manufacturer of the chemical grout and equipment to be used.

.

B. The above information data shall clearly indicate compliance with the specifications. The CONTRACTOR shall submit written exceptions to the specifications.

PART 2 PRODUCTS

2.1 CHEMICAL GROUT

A. The CONTRACTOR shall provide a chemical sealant solution containing principal chemical sealant constituent, initiator, and catalyst specifically recommended for the purpose of sealing leaks in stormwater lines.

B. While being injected, the chemical sealant must be able to react / perform in the presence of water (groundwater).

C. The cured material must withstand submergence in water without degradation.

D. The resultant sealant (grout) formation must prevent the passage of water (infiltrations) through the stormwater pipe joints.

E. The sealant material, after curing, must be flexible as opposed to brittle.

F. The chemical sealant shall be compatible with the CIPP resin as specified in Sections 02140 CURED-IN-PLACE PIPE LINER

G. The chemical sealant selected by the CONTRACTOR is subject to approval by the CITY and shall be one of the following types:

1. Acrylic chemical sealing material
2. Acrylate chemical sealing material
3. Urethane chemical sealing material

H. The grout design mix shall meet the following standards: Recommended Specifications for Sewer Collection System Rehabilitation, as referenced in ASTM F1216-03.

PART 3 EXECUTION

3.1 SEALING PIPE DEFECTS AND JOINTS

A. The CONTRACTOR shall perform chemical root treatment, if needed, in accordance with Section 02660 CHEMICAL ROOT TREATMENT.

B. Prior to performing chemical grouting, the CONTRACTOR shall remove roots and clean the sewer in accordance with Section 02650 PREPARATORY CLEANING.

C. In every case, mixing and handling of chemical sealing materials shall be in accordance with the manufacturer's recommendations.

D. The application of the sealing grout within the pipe shall be by means of remote- controlled equipment designed to be positioned at the specific point to be sealed and to apply the grout under sufficient pressure for the grout to pass through the opening and fill voids outside the pipe as well as the opening in the pipe wall. Review of the results shall be by operating the closed-circuit television camera confirming to the requirements of Section 02136 TELEVISION SURVEY.

E. The methods of sealing used shall not damage the pipe or change pipe alignment and the original cross sectional area shall not be permanently reduced or changed.

3.2 FLOW CONTROL

A. Stormwater flow shall not be interrupted during root treatment. In situations where it is necessary, the CONTRACTOR shall block / bypass flow in accordance with Section 02410 FLOW BYPASS PUMPING SYSTEM.

3.3 PERSONAL PROTECTIVE EQUIPMENT

A. The CONTRACTOR shall use appropriate protective clothing and equipment as recommended by the manufacturer during the use and handling of the material.

END OF SECTION

SECTION 02136
TELEVISION SURVEY

PART 1 GENERAL

1.1 REQUIREMENTS

A. The Work of this Section requires the CONTRACTOR to furnish all labor, materials, accessories, equipment, tools, transportation, services, and technical competence for performing all operations required to execute the internal closed circuit television (CCTV) survey to completely inspect stormwater structures and stormwater pipes from 6 inches in diameter to 48 inches.

1.2 GENERAL

A. CCTV inspections shall be conducted as required by PROJECT MANAGER and as required in these Sections.

B. Prior to any CCTV inspection, the stormwater line shall be cleaned and prepared in accordance with Section 02650, PREPARATORY CLEANING.

C. All survey video tapes shall be delivered to the PROJECT MANAGER on a “one line per tape” basis, and corresponding TV log, for each stormwater line surveyed.

D. Rehabilitation Work on stormwater lines shall not begin until PROJECT MANAGER reviews CCTV information from the preliminary CCTV inspection and PROJECT MANAGER provides written approval to CONTRACTOR to proceed on rehabilitating specific stormwater lines utilizing a specific rehabilitation procedure.

1.3 EQUIPMENT

A. Television Camera

1. The television camera used for the survey shall be of the pan and tilt type. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe, including underwater conditions.
.

2. The camera and lighting shall be capable of approximately 360-degree panning and 270-degrees tilting and provide sufficient magnification to resolve detail of 0.05 inch. Focal distance shall be adjustable through a range of from 6 inches to infinity.

3. The camera shall be operative in 100% humidity conditions.

4. The camera, television monitor, and other components of the video system shall be capable of producing a minimum 700 line resolution color video picture. The CONTRACTOR shall maintain camera in clear focus at all times. Picture quality and definition shall be to the satisfaction of the PROJECT MANAGER; and if unsatisfactory, equipment shall be removed and replaced with adequate equipment.

5. The camera shall be self-propelled (crawler or wheel) with a neutral gear and mounted on skids suitably sized (adjustable) for each pipe diameter to be investigated.

6. The equipment shall be capable of traversing stormwater pipes that may contain sediment and debris that could not be removed by cleaning.

7. Camera units shall have adjustable supports and shall be set so the camera axis is generally at the centerline of the pipe.

B. The video camera shall include a title feature capable of showing on the tape the following information:

1. Date of videoing
2. Time of videoing
3. Feature ID of starting drainage structure
4. Feature ID of ending drainage structure
5. Distance of camera from centerline of the starting drainage structure, continuously updated

C. Digital format video equipment is allowed.

1.4 SUBMITTALS

A. The CONTRACTOR shall submit shop drawings and other information in accordance with Section 01300 SUBMITTALS. The CONTRACTOR's submittals shall include video DVD and a sample of the video titles to be used, along with a sample of the television survey log to be used.

PART 2 PRODUCTS

2.1 DVD's

A. DVD's shall be supplied for all television surveys.

B. All DVD's shall be submitted to the PROJECT MANAGER and will become the property of the CITY

2.2 VIDEO LOGS

A. Video reports or logs are to be neat and completely filled out and submitted to the PROJECT MANAGER along with each DVD.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION SURVEY

A. Procedure

1. Prior to any repair work, the entire stormwater line (from drainage structure to drainage structure) shall be televised. The camera shall be placed at the center of the drainage structure and videoing shall commence prior to entering the pipe. The CONTRACTOR shall show the inside of the drainage structure walls and the pipe connection to the end of the drainage structure.

2. It is recommended that the depth of flow not exceed that shown below for the respective pipe sizes as measured in the drainage structure when performing television inspection

   6" – 10" Pipe . . . . . 20% of pipe diameter
   12" – 24" Pipe . . . . . 25% of pipe diameter
   27" – up Pipe . . . . . 30% of pipe diameter

3. When the depth of stormwater flow at the upstream drainage structure is above the maximum allowable for television inspection the CONTRACTOR shall either, reduce the flow by plugging or bypass pumping the flow in accordance with Section 02410, FLOW BYPASS PUMPING SYSTEM, or attempt to TV the line at a different time.

4. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the stormwater's condition. In no case shall television camera be moved at a speed greater than 30 feet per minute.

.

5. Manual winches, power winches, TV cable, in the presence of proper stormwater conditions shall be used to move the camera through the stormwater line. If the camera is being pulled through the stormwater line by a hydraulic cleaning unit hose, the cleaning nozzle shall be located at a minimum of eight (8) feet away from the camera to allow a clear, unobstructed view. Jet nozzle shall be used in front of camera while televising through a dip to draft out water.

6. If, during the survey operation, the television camera will not pass through the entire drainage structure section, the CONTRACTOR shall set up his equipment so that the survey can be performed from the opposite drainage structure or water side.

7. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones or other suitable means of communications shall be set up between members of the crew.

8. Measurement for location of the defects shall be made above ground by means of a meter device. Marking on the cable, or the like, which would require interpolation for depth of drainage structure, will not be allowed. Measurement meters shall be accurate to tenths of a foot over the length of the section being surveyed. Accuracy of the distance meter shall be checked by the use of a walking meter, roll-a-tape, or other suitable device.

9. Drainage structure numbers (utilizing City numbering system) and linear footage shall be shown on screen during taping.

10. A minimum of one still photograph for every 100 feet of stormwater main televised should be taken along with pictures of all defects.

11. Movement of the television camera shall be temporarily halted for a minimum of ten seconds at each visible point source of infiltration/inflow until the leakage rate from that source can be estimated.

B. Field Documentation

1. Television Survey Logs:
   a. Printed location records shall be kept by the CONTRACTOR and will clearly show the location in relation to an adjacent drainage structure of each infiltration point observed during the survey. Upstream footage (0) and downstream footage (i.e. 250) shall be shown in the log. In addition, other points of significance such as, unusual conditions, roots, stormwater connections, broken pipe, presence of scale and corrosion, and other discernible features will be recorded and a copy of such as records will be supplied to the PROJECT MANAGER at the end of each work week.
   b. The CONTRACTOR shall measure the depth of the upstream and the downstream drainage structures. Measurements shall be from the invert of the pipe televised to the top of the drainage structure rim and shall be recorded on the survey log.

2. Photographs:
   a. Instant developing, 35 mm, or the standard size photographs of the television picture of problems shall be taken by the CONTRACTOR upon request of the PROJECT MANAGER.
   b. The photographs should be digital and recorded in JPEG format. File name should be entrance drainage structure Feature ID utilizing City identification scheme, pipe number based upon a clockwise count of pipes from the exit pipe in the drainage structure and defect number. Therefore, the exit pipe will be the last number. For example, the file name for manhole feature ID 254689, pipe number 3 counter clockwise from the exit pipe in the manhole and the third defect found in this line would be 254689-3-3.jpg.

3. Video Recordings:
   a. The purpose of videoing shall be to supply a visual and audio record of the problem areas of the lines that may be replaced. Video playback shall be at the same speed that it was recorded.
   b. Once videoed, the DVD's become property of the CITY.
   c. Two copies (one original, one copy) of the DVD shall be provided to the PROJECT MANAGER within 7 days of the videoing.

4. Video Audio: As a preamble, at the beginning of the video, the CONTRACTOR shall state the following:

   a. Contractor's Name
   b. CCTV operator name
   c. Time of videoing

d. Date of videoing

e. Pipe Feature ID.

f. Upstream and downstream drainage structure Feature ID numbers

g. Pipe size

h. Pipe material

i. Upstream drainage structure depth

j. Street or location

k. Defect types

l. Defect locations broken into clock hours

m. At the end of each line, state: “End of line” and total linear footage.

3.2 POST CONSTRUCTION SURVEY

A. Procedure:

1. The post construction CCTV inspection shall be conducted after the stormwater pipes have been lined, tested, and approved by the PROJECT MANAGER.

2. In addition, the CONTRACTOR shall stop camera at all point repairs and sectional repairs and inspect entire repaired pipe section.

3. The CONTRACTOR shall invert white foreground to black as needed in the line section with light background.

END OF SECTION

SECTION 02139
PIPING LEAKAGE TESTING

PART 1 GENERAL

1.1 GENERAL

A. This Section only pertains to newly installed stormwater pipe as well as leakage testing for CIPP lined pipe as required.

1.2 REFERENCES

A. The following is a list of standards which may be referenced in this Section:

1. Chlorine Institute (2001 L Street N.W., Washington D.C. 28036): Pamphlet 6, Piping Systems for Dry Chlorine.

1.3 SUBMITTALS

A. Quality Control Submittals:

1. Testing Plan: Submit prior to testing and include at least the information that follows.
   a. Testing dates.
   b. Piping systems and section(s) to be tested.
   c. Test type.
   d. Method of isolation.
   e. Calculation of maximum allowable leakage for piping section(s) to be tested.
2. Certifications of Calibration: Testing equipment.
3. Certified Test Report.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PREPARATION

A. Notify CITY in writing 5 days in advance of testing. Perform testing in presence of the PROJECT MANAGER.

B. Gravity Piping:

1. Perform testing after drainage structures and backfilling have been completed between stations to be tested.
2. Determine groundwater level at time of testing by exploratory holes or other method acceptable to CITY

3.2 HYDROSTATIC TEST FOR GRAVITY PIPING

A. Testing Equipment Accuracy: Plus or minus 1/2 gallon of water leakage under specified conditions.

B. Maximum Allowable Leakage: 0.16 gallon per hour per inch diameter per 100 feet. Include service connection footage in test section, subjected to minimum head specified.

C. Exfiltration Test:

1. Hydrostatic Head:

a. At least 6 feet above maximum estimated groundwater level in section being tested.

b. No less than 6 feet above inside top of highest section of pipe in test section, including service connections.

2. Length of Pipe Tested: Limit length such that pressure on invert of lower end of section does not exceed 30 feet of water column.

D. Piping with groundwater infiltration rate greater than allowable leakage rate for exfiltration will be considered **defective** even if pipe previously passed a low pressure air test.

3.3 LOW PRESSURE AIR TESTING FOR GRAVITY PIPING

A. In accordance with ASTM F-1417.

B. General:

1. Notify PROJECT MANAGER in writing 5 days in advance of testing. Perform testing in presence of PROJECT MANAGER.

2. Isolate new pipelines that are connected to existing pipelines. Install pipe plugs as required to allow section of new pipe to be pressure tested.

3. Plug wyes, tees, stubs, and service connections with pneumatic plugs. The plug design shall be such that they will hold against the test pressure without external blocking or bracing. Such plugs shall be removable, and their removal shall provide socket suitable for making flexible jointed lateral connection or extension. One of the plugs shall have 3 air hose connections; one for inflating the plug, one for reading the air pressure and one for introducing air into the sealed line.

4. Furnish testing equipment and perform tests as approved by the CITY. Testing equipment shall provide observable and accurate measurement of leakage under specified conditions. Calibrate gauges with standardized test gauge at start of each testing day. Install compressor, air piping manifolds, gauges, and valves at ground surface.

5. Provide pressure release device, such as rupture disc or pressure relief valve, to relieve pressure at 8 psig or less.

6. If the groundwater is higher than the top of the pipe, the test pressure shall be increased by 0.43 psi/foot up to five (5) feet above the top of the pipe. For groundwater in excess of 5 feet above the top of the pipe, infiltration testing shall be conducted.

C. No person shall enter manhole or structure, or occupy area above opening of manhole or structure where pipe is under pressure.

D. Low pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure resulting from any groundwater above the pipe. At least two minutes shall elapse to allow the pressure to stabilize.

E. The time required for the internal pressure to decrease from 3.5 to 2.5 psig greater than the average back pressure shall not be less than the time shown for a given pipe diameter:

Pipe Diameter (in.)	Minimum Elapsed Time (min.)
8	7.5
10	9.25
12	11.25
15	14
18	17

3.4 INFILTRATION TESTING FOR GRAVITY PIPING

A. Groundwater Level: At least 5 feet above inside top of highest section of pipe in test section, including service connections.

B. Visible infiltration will be considered failure of the test.

3.5 FIELD QUALITY CONTROL

A. Test Report Documentation:

1. Test date.
2. Description and identification of piping tested.
3. Test fluid.
4. Test pressure.
5. Remarks, Including:
   a. Leaks (type, location).
   b. Repair/replacement performed to remedy excessive leakage.
6. Signed by CONTRACTOR and PROJECT MANAGER and/or CITY to represent that test has been satisfactorily completed.

END OF SECTION

SECTION 02140
CURED-IN-PLACE PIPE LINER

PART 1 GENERAL

1.1 REQUIREMENTS

A. The Work of this Section includes providing a cured-in-place-pipe (CIPP) liner to rehabilitate stormwater lines which will stabilize structural defects and prevent inflow and infiltration. The liner shall be smooth, hard, strong, and chemically inert. Additionally, the interior surface shall closely follow the contours of the host pipe. Applicable standards (latest versions) include:

1. ASTM D-790
2. ASTM D5813
3. ASTM F-1216
4. ASTM F-1743
5. ASTM F-2019

B. The scope of work requires the CONTRACTOR to provide all materials, labor, equipment, and services necessary for: bypass pumping and/or diversion of stormwater flows, rehabilitation of existing stormwater lines by lining the existing pipe, connecting into drainage structure, restoring affected drainage structure conditions, initial and final cleaning, CCTV inspection, and final testing of the pipe system.

C. Measurement shall be based upon linear footage of pipe rehabilitated. Measurement for rehabilitation shall be the actual distance measured from drainage structure to drainage structure, of each stormwater pipe lined.

D. The basis of payment shall be made at the contract unit bid price per linear foot of liner installed. The unit prices shall include all labor, materials, equipment, and all incidentals such as bypass pumping and/or diversion of stormwater flows, traffic control, pipe pre-conditioning, initial and final cleaning, pre and post CCTV inspection, and all testing of the CIPP system. No more than 50% of payment will be made for the liner until the CCTV tape is received and no more than 75% until satisfactory leakage testing has been completed by the contractor and approved by the City Project Manager.

1.2 PRE-BID SUBMITTALS

A. Submit with Bid Documents:

1. Manufacturer's technical literature on the proposed lining system conforming to this specification and standards referenced herein, including an affidavit attesting to the previous successful use of the material for lining stormwater lines and references for projects completed within the past 5 years that total a minimum of 500,000 linear feet (LF) of installed lining system.

2. Written certification from the manufacturer that the CONTRACTOR is an approved applicator of the proposed lining system, with a minimum of 5 years' experience with pipe rehabilitation. The CONTRACTOR's proposed superintendent for the work shall have a minimum of 5 years' experience with 2.5 years as a superintendent and shall be approved in writing as superintendent by the manufacturer of the lining system being bid. (Experience/References for the CONTRACTOR and superintendent shall be provided).

3. Information from the resin manufacturer, including specifications, characteristics, properties, type test information and methods of installation, including a written certification that the resin material is appropriate for the intended application and in conformance with the specification and referenced documents herein. All exceptions and deviations to the specification shall be itemized.

4. Certified copies of test reports on physical properties and chemical resistance of the proposed resin

5. CIPP sampling, preparation/curing, including required curing time and testing procedures.

6. Drainage structure/pipe and coupon test sealing methods and materials.

7. CIPP repair methods and materials.

1.3 SUBMITTALS

A. Submit Prior to Mobilization:

1. The CONTRACTOR shall submit to the PROJECT MANAGER for review complete design calculations for the liner thickness per ASTM F1216. The design shall be signed and sealed by a professional Engineer and certified by the manufacturer as to the compliance of his material to the values used in the calculations. Review of the calculations shall not relieve the CONTRACTOR of any contractual obligations.

2. The CONTRACTOR shall submit an installation method statement to the PROJECT MANAGER . The installation method statement shall include details concerning curing methods, repairing stormwater line defects in conjunction with drainage structures, joints, active infiltration, and other requirements concerning quality control/quality assurance including testing of the material of which the repair is made. The CONTRACTOR shall include a typical schedule for "wet out" of the flexible tube in the method statement together with a typical insertion and curing schedule/plan at the outset of the Contract. For each and every lining section proposed, the CONTRACTOR shall submit a schedule for "wet out" of the flexible tube together with the specific insertion and curing schedule/plan at least 24 hours in advance of installation.

3. Submit proposed testing laboratory with qualifications, experience

history, and references.

4. Provide an installation bypass pumping plan/(including emergency plans).

5. Provide traffic management plans as required in Section 015010.

B. After Completion of Each Section:

1. Process control sheet to include temperature/time log information, tap cut information and curing cycle.

2. Pre and Post CCTV inspection tapes or DVD's.

3. CIPP supplier certification of proper installation.

4. Certified copies of test reports on CIPP samples obtained during actual installation in the presence of the CONTRACTOR.

5. Physical samples. Samples removed for testing as requested by the Engineer, shall be individually labeled and logged to record the following:

a. CITY's Project number and title.
b. Sample number.
c. Segment number of line as noted on plans.
d. Date and time of sample.
e. Name of CONTRACTOR.
f. Location and by whom tested.
g. Results of test.
h. Street name and address
i. Starting and ending drainage structure ID # for each length of pipe lined
j. Samples shall be labeled as Follows:
1) Sample A: Restrain Sample
2) Sample B: Restrain Sample

1.4 CONTRACTOR QUALIFICATIONS

A. The CONTRACTOR or Subcontractor performing the work of this section shall be employees of the company manufacturing the CIPP system components, or shall be trained in the installation of the liner according to the manufacturer guidelines.

B. The CONTRACTOR shall demonstrate experience as described above for the selected method of curing.

C. Steam Curing

1. Because curing with steam is a less common process when compared to curing with hot water or air, and in order to help ensure a successful project, the installer shall submit a detailed quality assurance plan demonstrating that critical characteristics of the tube, wet out and the installation process are properly monitored and controlled. The plan will include the following components.

   a. The installer shall have in place a quality system specifically structured for the proposed steam cure system. The quality system shall include complete materials traceability.
   b. The installer must have installed a minimum of 250,000 ft. of CIPP using the proposed steam cure system, and the installer's project managers must have a minimum of one-year experience with the proposed system.
   c. A minimum of three successful stormwater collection system projects of a similar size and scope of work utilizing the proposed steam cure system shall be performed in the U.S. and documented to the satisfaction of the CITY to assure commercial viability
   d. The installer shall have in place a safety system specifically structured for the use of steam.
   e. The thermoplastic coating on the CIPP tube shall be formulated from a material designed specifically to withstand the high temperature curing process utilizing steam. Coating shall be a polypropylene/polyethylene blend or equal.
   f. The thermoset resin system shall be designed to cure properly when using steam.
   g. The installer shall have in place step-by-step procedures for the entire installation and cure process.

1.5 RESPONSIBILITY FOR OVERFLOWS OR SPILLS

A. In the event that the CONTRACTOR's work activities contribute to overflows or spills, the CONTRACTOR shall immediately take appropriate action to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify the designated CITY in a timely manner.

B. CONTRACTOR shall indemnify and hold harmless the CITY and PROJECT MANAGER for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the CONTRACTOR, including the legal, engineering, and administrative expenses of the CITY and PROJECT MANAGER in defending such fines and claims.

1.6 WARRANTY

A written guarantee of 5 years in length shall be provided by the CONTRACTOR to the CITY against any breakdown of the liner material, inadequate structural strength or any shortcoming in workmanship.

PART 2 PRODUCTS (NOT USED)

2.1 MATERIALS

A. Flexible Liner Tube:

1. The flexible liner shall be a composite tube with one or more layers of needled felt or equivalent non-woven material manufactured under quality controlled conditions set by the manufacturer. Tube shall be sized for each section so that, when installed, it will fit snugly and firmly inside the existing stormwater pipe and produce the required thickness after the resin is cured.

2. The flexible liner tube shall fit completely by length and diameter in the stormwater pipe, with allowance for proper longitudinal or circumferential stretching or shrinkage due to pressure or expansion being made. Maximum stretching allowances shall be as defined in ASTM F1216.

3. The CONTRACTOR shall verify the lengths in the field before cutting liner to length. The lining shall be fabricated in such a length that when installed, it will occupy exactly the length of the pipeline between the launch and reception drainage structures.

4. The lining shall be of the correct diameter so that after installation, it does not wrinkle by more than two percent for linings in stormwater lines equal to or greater than 24 inches internal diameter, and by more than one percent for linings in stormwater lines less than 24-inch internal diameter.

5. The tube shall contain no intermediate layers that may delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers. Where several layers of felt are required, the inner layer shall be stitched to form a tube. Each successive layer shall be individually wrapped around the previous one and stitched together. The outer layer of felt shall have an installation tube pre-bonded to it, or a sheet of this material shall be wrapped around the completed felt tube. Where a pre- bonded material is used, a covering strip shall be bonded over the seam to form an airtight joint.

6. The dimensions of the lining shall account for any loss of pipe wall thickness due to hydrogen sulfide corrosion and deformation of the pipe to be lined where this is less than 10 percent of diameter.

7. The liner shall be fabricated from materials which when cured, will be chemically resistant to reagents as defined in ASTM D543.

8. A pre-liner shall be applied to the tube on what will become the interior wall of the finished CIPP. The pre-liner shall be polypropylene and shall be compatible with the resin system used and shall not adversely affect the adhesive properties of the resin used in the pipe. If a plastic film is applied to the CIPP after curing, this film shall be translucent enough that the resin is clearly visible, and it shall be firmly bonded to the felt material.

9. At the time of manufacture, each lot of liner shall be inspected and certified to be free of defects. The tube shall be marked for distance at regular intervals along its entire length.

B. Resin:

1. The resin used to impregnate the tube shall produce a cured tube that shall be resistant to shrinkage, shall not corrode or oxidize, and shall also be resistant to abrasion from solids, grit, and sand in stormwater. The resin shall have proven resistance to the stormwater environments.

2. The resin shall have proven resistance to ultra-violet light (sunlight) at any stage prior to installation.

3. Resin systems shall be neat resins with no additives.

4. The resin system proposed shall be compatible with the lateral liners specified in Section 330143 and proposed for use on this project.

5. The internal wall color of the cured liner shall be a light reflective color so that a clear, detailed CCTV inspection can be accomplished.

6. The chemical resistance of the resin system selected shall have been tested by the resin manufacturer in accordance with ASTM C543. Exposure to the chemical solutions listed in Table 1 at temperatures of up to 75 degrees F shall be conducted for a minimum period of one month and shall result in a loss of not more than 20 percent of the initial structural properties. The resin system shall be manufactured by a company selected by the CIPP supplier. Polyester, vinylester, or epoxy resins complying with the requirements in Table 2 shall be used.

C. CIPP Properties:

1. The CIPP after curing shall meet the structural properties listed below:

Table 1. CIPP Initial Structural Properties

Property	ASTM Method	Value (+/- 10%)
Tensile Strength	D638	3,000 psi
Flexural Strength	D790	4,500 psi
Short Term Flexural Modulus of Elasticity	D790	250,000 psi

D. CIPP Thickness:

1. The minimum thickness for the CIPP, after curing, shall be calculated based on the following design conditions in accordance with ASTM F-1216:

   a. Fully deteriorated pipe condition.

   b. Ovality reduction factor C equal to 0.64

   c. The CIPP is subjected to a full soil load of 120 pounds per cubic foot.

   d. The CIPP is subjected to traffic live loads as calculated by

AASHTO Standard Specifications for Highway Bridges, HS-20-44

e. The modulus of soil reaction for pipe zone backfill material is 1,000 psi.

f. The CIPP is subject to a groundwater elevation at ground surface.

g. The long-term flexural strength and long-term flexural modulus of elasticity for CIPP shall be equivalent to 50 percent of the initial flexural strength and initial flexural modulus of elasticity, respectively, as measured in accordance with ASTM D790.

h. The minimum overall factor of safety is 2.0.

i. The design life of the CIPP repair shall be 50 years.

j. The thickness of the CIPP shall be as specified in standards ASTM F 1216, ASTM F 1743, or ASTM F 2019.

E. Manufacturers:

1. Insituform / Insituform Technologies, Inc.
2. Inliner / Inliner Technologies, Inc.
3. National Liner
4. MuniLiner / EasyLiner, LLC
5. Approved Equal

PART 3 EXECUTION

3.1 DELIVERY, STORAGE AND HANDLING

A. If the flexible tube is impregnated with resin at the factory, it shall be transported, installed, and cured before expiration of the shelf life.

B. Impregnated tube shall be stored and transported under refrigerated, ultraviolet light-free conditions.

C. No cuts, tears, or abrasions shall occur during handling. The CITY may inspect the tube before it is placed into the host pipe.

3.2 TEMPORARY FLOW BYPASS AND DIVERSION PUMPING

A. The CONTRACTOR, shall provide for the transfer of flow, through or around section or sections of pipe that are to be repaired. The proposed bypassing system shall be approved in advance by the PROJECT MANAGER . The acceptance of the bypassing system in advance by the PROJECT MANAGER shall in no way relieve the CONTRACTOR of responsibility and/or public liability. Temporary flow bypass and diversion pumping shall be carried out in accordance with Section 02410, FLOW BYPASS PUMPING SYSTEM.

3.3 PRE-INSTALLATION PROCEDURES

A. All requisite pre-installation submittals shall be approved by PROJECT

MANAGER including traffic management measures, safe pedestrian passage, provision of vehicular access to property, bypass/diversion pumping and emergency measures before any work can be commenced.

B. Preconditioning shall be carried out in accordance sections 02650 - PREPARATORY CLEANING,02660- ROOT REMOVAL, and 02134 - CHEMICAL GROUTING. In addition, the CONTRACTOR shall, prior to installation of the lining: high pressure flush and vacuum every stormwater line section to be rehabilitated including pertinent drainage structures, and remove buildup or any other obstruction that may interfere with lining operations.

C. All debris removed from the stormwater line during cleaning shall be transported in watertight containers and disposed of in accordance with all local, State, and Federal regulations.

D. Condition of existing line shall be verified following cleaning by CCTV inspections in accordance with section 02136, TELEVISION SURVEY.

E. Damaged stormwater lines unsuitable for lining shall be reported to the CITY . The CITY will facilitate repairs prior to installation of any lining materials. In the event of a required stormwater line repair, the CONTRACTOR shall be prepared to move to another line segment to continue lining operations.

3.4 GENERAL INSTALLATION PROCEDURES

A. Wet Out:

1. Thoroughly saturate flexible tube prior to installation. Catalyst system or additives compatible with the resin and flexible tube shall be as recommended by the manufacturer.

2. Handle the resin impregnated flexible tube to retard or prevent resin setting until it is ready for insertion.

3. The CONTRACTOR shall complete a wet-out process control sheet for every lining completed. The control sheets shall provide the following information:

a. Liner Manufacturer
b. Liner Diameter
c. Number of layers
d. Resin amount
e. Resin type
f. Resin Manufacturer
g. Batch number
h. Catalyst and accelerator name/type
i. Hardener name/type
j. Percent of filler, if any

k. Filler name/type

l. Batch number

m. Mixing ratios

n. Vacuum pressure of impregnation process

o. Wet-out start time and date

B. Insertion:

1. CIPP shall be installed in accordance with the practices outlined in ASTM F1216 for direct inversion installations and ASTM F 1743, or ASTM F2019 for pull-in installations.

2. Insert flexible tube through an existing manhole by a manufacturer approved method. The insertion method shall not cause abrasion or scuffing of the tube.

3. When using the inversion method, the addition of water pressure shall be adjusted to cause the impregnated flexible tube to invert from drainage structure to drainage structure, holding the tube tight against the host stormwater pipe as described in the ASTM F 1216 standard.

4. The CONTRACTOR shall complete an installation process control sheet for every lining completed. The control sheets shall provide the following information:

a. Liner length
b. Hydrostatic head at the point of inversion
c. Hydrostatic head at the termination point
d. Time when inversion process starts
e. Time start cutting ends
f. Time start cutting laterals
g. Number of laterals cut

C. Curing:

1. Curing may be accomplished by the application of hot air, steam, hot water or ultraviolet light as recommended by the liner manufacturer.

2. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the manufacturer's recommended cure schedule.

3. The heat source should be fitted with suitable monitors in accordance with the ASTM F 1216. The temperature of the incoming and outgoing heat source shall be recorded in order to determine when uniform temperature is achieved throughout the length of the liner. Thermocouples shall be installed at the top and bottom of the liner between the liner and the host pipe to appropriately control the curing process of the resin.

4. If air or steam is used in the curing process, the liner manufacturer shall provide the minimum pressure required to hold the tube tight against the host pipe and maximum pressure allowable to not damage the tube. Once the inversion has started, the pressure shall be maintained between the recommended pressure ranges until the inversion has been completed. Should the pressure deviate more than 2.3 ft. of water from within this range, the installed liner shall be removed.

5. The CONTRACTOR shall complete a curing process control sheet for every lining completed. The control sheets shall provide the required temperatures and time for the different steps of the curing process such initial cure, post- cure, and cooling as outlined in ASTM F1216-03. Initial cure may be considered completed when exposed portions of the flexible tube pipe take a hard set and temperatures are adequate, as recommended by the manufacturer.

D. Cool Down:

A cool-down process shall be conducted that complies with the resin manufacturer's specification. Cool down may be accomplished by the introduction of cool water or air into the installation standpipe to replace the initial heating agent. The contractor shall cool the hardened pipe to a temperature below 100°F before relieving the pressure in the pressure apparatus. If the installed tube is a fiberglass tube, it shall be cooled down in accordance with ASTM F2019.

E. Finish:

1. The finished CIPP shall be continuous and free from visual defects such as foreign inclusions, dry spots, pinholes, delamination, and wrinkles as specified above. Any section of lining with such defects shall be removed and replaced at no additional cost to the CITY.

F. Clean Up:

1. After the liner installation has been completed and accepted by CITY, the CONTRACTOR shall clean up the entire project area and restore the site to its original condition prior to the commencement of work. All excess material and debris not incorporated into the permanent installation shall be disposed of by the CONTRACTOR.

3.5 DRAINAGE STRUCTURES

A. CIPP connections at the drainage structure opening shall be a watertight seal. The annular space between the CIPP and host pipe at each drainage structure shall be sealed with a chemical sealant according to specification 02134 CHEMICAL GROUTING. Material and methods shall be submitted for approval to PROJECT MANAGER prior to commencing any work onsite.

B. Drainage structure inverts shall be finished to provide a smooth transition between connections. CIPP liner material, an approved epoxy, or similar material may be used to form a smooth transition to eliminate sharp edges of CIPP, within the host

pipe and in drainage structures at the concrete bench, and channel invert. Materials and methods shall be submitted for approval by PROJECT MANAGER prior to commencing any work onsite.

C. CIPP connections and invert rehabilitation shall be compatible with drainage structure rehabilitation activities. Coordination and compatibility of materials and methods shall be submitted for approval prior to commencing any work onsite.

3.6 POST-TELEVISING OF COMPLETED WORK

A. Following CIPP liner installation, a television survey shall be performed by the CONTRACTOR in accordance with section 330136, TELEVISION SURVEY, including preconstruction and post construction surveys. The finished inspections shall be continuous over the entire length of the stormwater line between two drainage structures. The completed line shall be completely free from visual defects that are deemed significant by the PROJECT MANAGER.

B. Submit to the CITY color DVD compact discs showing completed work.

C. Correction of failed CIPP or CIPP deemed defective from post-installation television inspection or test reports for structural values, thickness, etc., as determined by CITY and/or PROJECT MANAGER shall be repaired at no extra cost to the CITY. Method of repair, which may require field or workshop demonstration, shall be approved by PROJECT MANAGER prior to the commencement of work.

1. An internal condition survey shall be allowed for in the CONTRACTOR's installation rates and work schedule, to be carried out 1 year following the installation of the repair. Should any fault be found with the repair, the fault shall be rectified as specified by CITY. Rectification may include complete removal and replacement of the previously installed repair and additional re-inspection 1 year later. Correction of failed CIPP or CIPP deemed defective from mid-warranty internal condition inspection or test reports for structural values, thickness, etc., shall be repaired or replaced at no extra cost to CITY .

3.7 TESTING

A. CIPP Material Testing

1. For every 5 mainline segments lined, the CONTRACTOR shall prepare two samples for the required inspection tests. These two samples shall be used to satisfy all material testing requirements. As referenced in ASTM 1216-03 or ASTM F2019, the samples shall be prepared in accordance with the restrained sample method. The restrained samples shall be taken from excess cured CIPP at the drainage structure connection where installation was started or terminated. Each sample shall be large enough to provide a minimum of three specimens for tensile testing and five specimens for flexural properties testing. Prior to conducting laboratory tests, field thickness test shall be performed on the two test specimens.

2. Field Thickness Testing

   a. The wall thickness measurements shall be taken in accordance with ASTM D 2122 on the two test specimens. A minimum of four measurements evenly spaced on each test specimen (eight total) shall be made and the average thickness shall be calculated using all measured values. The average thickness of the eight measurements shall be equal to or greater than the required design thickness. Failure of the thickness test shall be grounds for rejection of the CIPP liner.

3. Laboratory Testing:

   a. The samples shall be tested for modulus of elasticity and flexural strength in accordance with ASTM D790. Preparation and testing standards shall be performed in accordance with the approved submittals. Failure of either the modulus or flexural strength tests on either sample shall be grounds for rejection of the CIPP liner.
   b. Testing shall be completed by an accredited laboratory at the CONTRACTOR'S expense. The CONTRACTOR shall submit the chosen laboratory with appropriate accreditation documentation for approval by the ENGINEER prior to testing. Testing results shall be provided to the CITY within seven days of receipt.

B. Hydrostatic Testing

1. As provided by Section 02139, PIPE LEAKAGE TESTING.

2. Hydrostatic testing will be required for 5% of the lined manhole runs contained in the project as designated by the ENGINEER.

3. If the lined main fails the leakage test, the contractor shall locate the leak and perform corrective measures including:

   a. Re-inspection by CCTV
   b. Repair using materials and methods contained in this specification
   c. Repeat the leakage test

4. If more than fifty percent (50%) of the leakage tests fail, the PROJECT MANAGER may direct the CONTRACTOR to test all of the repaired mains at no additional cost.

END OF SECTION

SECTION 02200
SITE PREPARATION

PART 1 GENERAL

1.1 DEFINITIONS

A. Interfering or Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; topsoil.

B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface.

C. Scalping: Removal of sod without removing more than upper 3 inches of topsoil.

D. Project Limits: Areas, as specified, within which Work is to be performed.

1.2 QUALITY ASSURANCE

A. Obtain PROJECT MANAGER's approval of staked clearing, grubbing, and stripping limits, prior to commencing clearing, grubbing, and stripping.

1.3 SCHEDULING AND SEQUENCING

A. Prepare site only after adequate erosion and sediment controls are in place. Limit areas exposed uncontrolled to erosion during installation of temporary erosion and sediment controls.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

A. Clear and strip areas actually needed for site improvements within limits specified.

B. Property obstructions which are to remain in-place, such as buildings, sewers, drains, water or gas pipes, bridges, etc., are to be carefully protected from damage.

C. Do not injure or deface vegetation that is not designated for removal. All branches potentially interfering with construction operations shall be pruned prior to starting work and following approval of the PROJECT MANAGER and the City of Fort Lauderdale Urban Forester.

3.2 LIMITS

A. As Follows, but not to Extend Beyond Project Limits.

1. Excavation Including Trenches: 5 feet beyond top of cut slopes or shored wall.

2. Other Areas: As shown.

B. Remove rubbish, trash, and junk from entire area within Project limits.

3.3 TEMPORARY REMOVAL OF INTERFERING PLANTINGS

A. Remove and store, as specified in Section 02930, TREES, PLANTS, AND GROUND COVERS, shrubs and trees that are not designated for removal but do interfere with construction or could be damaged by construction activities.

B. Photograph and document location, orientation, and condition of each plant prior to its removal. Record sufficient information to uniquely identify each plant removed and to assure accurate replacement.

3.4 SCALPING

A. Do not remove sod until after clearing is completed and resulting debris is removed.

B. Scalp areas within limits specified.

3.5 DISPOSAL

A. Clearing and Debris:

1. Woody debris may be chipped. Chips may be sold to CONTRACTOR's benefit or used for landscaping onsite as mulch or uniformly mixed with topsoil, provided that resulting mix will be fertile and not support combustion. Maximum dimensions of chipped material used onsite shall be 1/4-inch by
2 inch**.** Dispose of chips that are unsaleable or unsuitable for landscaping or other uses with unchipped debris.

2. Limit offsite disposal of clearing and grubbing debris to locations that are approved by federal, state, and local authorities, and that will not be visible from Project.

B. Scalpings: As specified for clearing and grubbing debris.

END OF SECTION

SECTION 02220
DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal and disposal of buildings, structures, pavement surfaces, sidewalks, underground obstructions, and other facilities necessary to prepare the area for construction of proposed facilities.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PREPARATION

A. Utilities:

1. Notify CITY or appropriate utilities to turn off affected services before starting demolition or alterations. Provide not less than 72 hours' notice to the CITY of the utility prior to the shutdown.
2. Remove utility lines exposed by demolition excavation.
3. Remove electric, sanitary, and storm drainage adjacent to buildings to be demolished.
4. Excavate utility lines serving buildings to be demolished and provide a permanent leak-proof closure for water and gas lines.
5. Plug stormwater lines at locations shown or at limits of excavation if not shown with concrete length of plug, 5 feet minimum to prevent groundwater infiltrating stormwater systems.

B. Removal and Storage of Equipment for Reuse:

1. Do not remove equipment and materials without approval of CITY.
2. Properly store and maintain equipment and materials in same condition as when removed.
3. CITY will determine condition of equipment and materials prior to removal.

3.2 DEMOLITION

A. Additional quantities of new construction or additional work caused by the demolition, beyond the limits, will be performed at the CONTRACTOR's expense.

B. Drawings define minimum portion of structures to be removed. Unless otherwise shown, rough cuts or breaks may be made exceeding limits of demolition shown. Provide sawcut at limits of all pavement removal. Structures shall be removed in such a way as to leave no obstructions to any proposed new structures of to any waterways.

C. Core drill floor slabs, catch basins, and other concrete improvements to remain in place below ground, or break holes at structure's lowest point to allow water to freely migrate through.

D. Remove piping from areas to be backfilled. Pipe, valves, and fittings adjacent to those to be removed may also be removed as salvage

E. Remove all materials associated with existing equipment that is to be removed or relocated.

F. Cut off concealed or embedded conduit, boxes, or other materials a minimum of 3/4 inch below final finished surface.

G. Extract existing piling, which conflict with new piles, prior to driving new piles.

3.3 DISPOSAL

A. Dispose of debris and other no salvaged materials offsite in licensed landfills.

3.4 BACKFILLING

A. Demolished Areas: Backfill to existing ground level or foundation level of new construction.
B. Backfill Material and Compaction:
   1. Conform to Section 02315, FILL AND BACKFILL.
   2. Do not use demolition debris as backfill material.

3.5 SALVAGE

A. Equipment and materials, including piping within the limits of demolition, unless otherwise specified, will become the property of CONTRACTOR.

B. Any material designated to remain by the CITY shall be stored in neat piles in a location directed by the CITY.

C. Fire Hydrants:

   1. Salvage for future use by CITY.

   2. Remove and leave for CITY in location directed by the CITY.

END OF SECTION

SECTION 02240
DEWATERING

PART 1 GENERAL (NOT USED) PART

2 PRODUCTS (NOT USED) PART

3 EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall be responsible for design, installation, and operation of a dewatering system to dewater specified excavations.

1. The dewatering system shall be designed in accordance with the Best Management Practices (BMP's) adopted by FDEP.

2. Inspection and control of dewatering system operations will be in accordance with the FDEP guidelines established in the Florida Erosion and Sediment Control Inspector's Manual (current edition).

B. Continuously manage and control excavation water recharge in order to facilitate and not impede construction activities at all times, including weekends, holidays, and during periods of work stoppages, and furnish and install, and operate, a contingency backup dewatering system to maintain control of excavation water levels to facilitate construction (i.e.; no construction delays).

3.2 SUBMITTALS

A. Submittals shall be made in accordance with the requirements specified in Section 01300, Submittals, and the requirements of this Section.

B. Provide name, address, and phone numbers of all subcontractors.

C. The CONTRACTOR shall submit a Dewatering Best Management Practices (BMP) Plan prior to the start of excavation expected to include dewatering operations. The Plan shall provide detailed descriptions of dewatering procedures to be utilized to meet the requirements of this Section. Methodologies to control dewatering discharge contamination include, but are not limited to:

1. Holding tanks of adequate size and volume.
2. Wellpointing systems.
3. Sump pumping systems.
4. Chemical precipitation of particulates.
5. Filter systems and siltation controls.
6. Outfall booms.

D. The CONTRACTOR shall provide a Site Health and Safety Plan and Activity Hazard Analysis (AHA) for contaminated soil as specified in Section 02250, AFFECTED SOIL AND LIQUID DISPOSAL, and/or groundwater as specified in this Section, to include the following:

1. A written description of the proposed method for temporary stockpiling, transportation, and disposal of all wastes.
2. Copy of permits of disposal facilities.
3. Certification of disposal of all wastes.
4. Directions to the nearest hospital and phone number.
5. Emergency contact phone numbers.
6. Laboratory analyses and sampling plan required for transportation and disposal of all wastes in accordance with applicable federal, state, and local requirements.

E. Upon Completion of Remediation Activities, the Following shall be Provided:

1. Copy of manifests for all wastes leaving the site.
2. Copy of the laboratory analyses results from all sampling activities.
3. Copy of closure reports that may be required.

3.3 SURFACE WATER CONTROL

A. Remove surface runoff controls when no longer needed.

B. Seal off or berm catch basins in the area of construction to prevent discharge of untreated dewatering effluent or runoff from unstabilized construction areas into storm drains.

C. All drain inlets or catch basins used for dewatering discharge shall be provided with silt and sediment removal barriers as approved by the PROJECT MANAGER.

1. All barriers shall be cleaned regularly to avoid sediment discharge into the storm drain system.
2. Construction activities will be stopped at no cost to the CITY until sediment controls are properly maintained, installed, and in compliance with the dewatering permit.
3. All barriers shall be removed upon issuance of a hurricane warning.

3.4 DEWATERING SYSTEMS

A. Design, furnish, and install, operate, and maintain a dewatering system of sufficient size and capacity to permit excavation and subsequent construction activities in water-free conditions, and to lower and maintain the excavation area

groundwater level a minimum of 2 feet below the lowest point of excavation. The dewatering system shall be designed and operated such that the system continuously maintains excavations water levels so as
to maintain the excavation water level in order to allow for the initiation and completion of excavation backfill compaction and restoration activities.

B. Dewatering systems shall include, but is not limited to, furnishing and installing wells or well points, and or other equipment and appurtenances as may be necessary, including system components or equipment, installed outside the outermost perimeter of the excavation limits, and sufficiently below lowest point of excavation, to maintain the specified or required groundwater elevation.

C. Open trench pumping maybe permitted upon the approval of the CITY.

D. Design and Operate Dewatering Systems:

1. To prevent loss of ground as water is removed.
2. To avoid inducing settlement or damage to existing facilities, completed Work, or adjacent property.
3. Avoid surface water pollution or discharge of sediment to storm drain systems or waterways.

E. Provide supplemental ditches and sumps only as necessary to collect water from local seeps. Do not use ditches and sumps as primary means of dewatering. The CONTRACTOR shall not direct any flow of water over pavement surfaces. Discharge of water shall be conducted as approved by the local, state, and federal agencies and the CITY.

F. Provide controls to prevent surface water from entering excavation pits, trenches, or stockpiled materials.

3.5 PIPELINES CONSTRUCTED UNDER WATER

A. In the event that it is found that the water in a trench cannot be lowered by ordinary means, i.e., well points and pumps, an alternate construction method may be proposed by the CONTRACTOR. Complete details, specifications, manufacturer's descriptive literature, installation lists and any other pertinent data regarding the proposed alternate method shall be submitted as an alternate by the CONTRACTOR to the Engineer within 5 calendar days of the time that the CONTRACTOR anticipates using such alternate method.

B. If the PROJECT MANAGER approves the alternate method in writing, it may be used, so long as the Work is performed in a manner which, in the opinion of the PROJECT MANAGER, conforms to the method and procedure as set forth in the information supplied by the CONTRACTOR in his original application for use of an alternate method. The PROJECT MANAGER may revoke approval of the alternate method if at any time, in his opinion, the Work is not conforming to any applicable portion of these Specifications.

C. No pipeline shall be laid under water without approval of the CITY.

D. If the dewatering system is eliminated or the effort reduced, and the pipe is laid underwater, additional pipe zone material will be required as backfill to the water table elevation, or to the level it was reduced to.

3.6 DISPOSAL OF WATER

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 or facility, in accordance with Broward County Code of Regulation,
Sections 27-27, 27-193(a), 27-193(b) (3)a and 27-196. CONTRACTOR shall secure, obtain, and pay for all necessary local, state, and federal permits, licenses, fees, and or approvals to discharge water or perform onsite or offsite treatment and disposal. Treat water collected by dewatering operations as required by regulatory agencies, prior to discharge.

B. Discharge water as permitted, and in regulatory compliance with CONTRACTOR obtained discharge permits/licenses.

1. All discharge activities shall be performed so as to prevent silt and sediment discharge and eliminate any soil erosion or flooding, or otherwise damage existing facilities, completed Work, or adjacent property.

2. Maximum allowable turbidity of discharges to surface waters or storm drains will be 10 NTU's.

3. Sump discharges cannot be discharged directly to storm drains or surface waters without treatment.

C. Affected storm stormwater outfalls shall be protected with floating silt booms as approved by the Broward County Department of Environmental Planning and Protection (BCDPEP) and the PROJECT MANAGER. All accumulated debris resulting from the dewatering discharge collecting in the boom shall be removed on a daily basis.

D. Visible silt plumes emanating from the area around the outfalls will be considered a failure of the silt and sediment removal measures and may result in a Notice of Violation issued by BCDPEP. The CONTRACTOR will be responsible for all fines associated with the violation of the dewatering permit conditions issued to the CONTRACTOR.

E. Failure to control dewatering discharges as described above and as detailed in the Florida Erosion and Sediment Control Inspector's Manual, may result in an order to cease dewatering operations until the discharge problems are corrected. No claims will be accepted for costs or delays associated with unacceptable dewatering discharge practices.

3.7 WELL POINT REMOVAL

A. Well point holes shall be filled with sand which shall be washed into the hole.

B. Well point holes located within asphalt pavement surfaces or concrete pavements, shall be filled with sand to the subgrade. The remaining hole shall be filled with non-shrink grout.

3.8 CONTAMINATED GROUNDWATER AND DISPOSAL REQUIREMENTS

A. If CONTRACTOR suspects, witnesses, or identifies, groundwater contamination at any time during the performance of the Work, CONTRACTOR shall notify the PROJECT MANAGER immediately. Results will be obtained by the onsite mobile laboratory.

B. If analytical testing (by CITY or CITY -designated laboratory or subcontractor) documents and indicates elevated concentrations above FDEP action levels (Chapter 62-777, Florida Administrative Code) as verified by the PROJECT MANAGER, dewatering operations will be suspended until appropriate treatment and or construction measures can be implemented. CONTRACTOR shall not resume operations until notified to do so in writing by the PROJECT MANAGER and construction of the remaining stormwater pipelines in that area will be installed in the wet or normal construction activities shall be resumed in another areas determined by the PROJECT MANAGER. There shall be no delay or mobilization claim associated with moving to another project area, unless all other Work has been completed. In addition, the local agency will be immediately notified via telephone and in writing by the CITY. Dewatering activities in the area will not proceed until review of the matter with the local agency is resolved and written authorization is issued.

C. Treatment of the groundwater will include three options depending on the magnitude of the contamination in the trench or as determined by the PROJECT MANAGER: Granular Activated Carbon (GAC) Treatment Vessels**,** Mobile Air Stripping Units, or Vacuum Truck Removal and Disposal or other method as approved by the PROJECT MANAGER. The CONTRACTOR will provide a submittal list of all qualified groundwater remediation subcontractors for GAC vessel treatment/portable air stripping unit and vacuum truck disposal including phone numbers, contact names, and addresses prior to start of construction. The selected groundwater treatment/recycling facility for hauling contaminated groundwater shall also be identified.

D. If contaminated groundwater in the dewatering trench is encountered, the remediation operations will begin once local agency approval is obtained. Contaminated water will be disposed first into a high volume holding (FRAC) tank and then treated through a GAC unit/portable air stripper or recovered into vacuum hauling trucks for disposal.

E. Effluent water from the treatment system will be analyzed by the onsite mobile laboratory to confirm that concentrations are below regulatory limits. Effluent water will then be directed to a pre-approved alternative location as determined by local agency and/or the Engineer.

F. A Dewatering Plan describing the dewatering approach, groundwater monitoring, and remediation alternative is attached.

END OF SECTION

SECTION 02250
AFFECTED SOIL AND LIQUID DISPOSAL

PART 1 GENERAL

1.1 WORK INCLUDED

A. This Section covers the Work necessary to remove, transport, and properly dispose of the following wastes:

1. Liquid petroleum product.
2. Affected soil.
3. Free petroleum product.

1.2 DEFINITIONS

A. Liquid petroleum (product) is fluid petroleum product partly or entirely composed of diesel fuel or gasoline.

B. Affected soil is defined herein.

C. Free petroleum product is defined as a liquid which forms a separate floating phase distinct from the groundwater.

1.3 SUBMITTALS

A. Submittals shall be made in accordance with the requirements specified in Section 01300 SUBMITTALS, and the requirements of this Section.

B. The CONTRACTOR Shall Provide the Following Submittals:

1. A written description of the proposed method for temporary stockpiling, transportation, and disposal of all wastes.
2. Copy of permits of disposal facilities.
3. Certification of disposal of all wastes.
4. Copy of manifests for all wastes leaving the site.
5. Copy of the laboratory analyses required for transportation and disposal of all wastes in accordance with applicable federal, state, and local requirements.
6. Provide name, address, and phone number of all subcontractors.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 LIQUID PETROLEUM PRODUCT

A. Classification of liquid petroleum product shall be made by the CITY.

B. The CONTRACTOR shall remove all liquid petroleum product if discovered in the trench during dewatering operations.

C. If the petroleum product is discovered, the product will be disposed as described herein.

D. If contamination is discovered and it is determined that it must be removed, the CONTRACTOR shall commence remediation activities as determined by the CITY. During the remediation activities, the CONTRACTOR shall move to another location as determined by the CITY to resume normal construction activities. There shall be no delay or mobilization claim associated with moving to another project area, unless all other Work has been completed.

3.2 AFFECTED SOIL

A. Excavation of affected soil shall be accomplished in accordance with Section 02316 EXCAVATION. The soil may be contaminated with petroleum product which may be partly or entirely diesel fuel, gasoline, or chlorinated solvents.

B. Classification of affected soil for disposal purposes will be determined by the CITY using an Organic Vapor Monitor (OVM) with photo ionization detector or equivalent provided by the CITY. Soils with vapor readings higher than 10 parts per million (ppm) for diesel as defined in Chapter 62-770 of the Florida Administrative Code, are excessively contaminated and will be identified by the CITY for treatment and disposal. Affected soil must be placed on an impermeable barrier when temporarily stockpiled. All stockpile leachate or runoff must be collected for disposal in accordance with applicable federal, state, and local regulations. Soils designated for removal and disposal shall be prepared for shipment, transported, and disposed of in accordance with the requirements of this Section.

C. Affected soils shall be processed by incineration at a state licensed facility. These soils shall be transported and disposed of in accordance with federal, state, and local regulations. The CONTRACTOR shall be responsible for all soil analyses required for transportation and disposal.

The CONTRACTOR shall be responsible for testing soil which has been incinerated to certify the treated soil meets applicable federal, state, and local regulations for final disposal.

3.3 FREE PETROLEUM PRODUCT

A. Some free petroleum products which may be partly or entirely diesel fuel or gasoline may be encountered during excavation activities. The CONTRACTOR shall remove free petroleum product, if necessary, when a separate floating phase greater than 0.10-inch thick is present as required by health and safety considerations. The free petroleum product shall be removed by skimming, pumping to an oil/water separator, or other approved methods.

B. Free petroleum products shall be transported and disposed by the CONTRACTOR in accordance with federal, state, and local regulations. The

CONTRACTOR is responsible for any laboratory analyses required for disposal of the free petroleum products.

3.4 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.

3.5 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 PROJECT MANAGER two (2) 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.

3.6 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 PROJECT MANAGER and shall immediately notify the PROJECT MANAGER 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 PROJECT MANAGER. 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 spilled in transit.

C. The CONTRACTOR shall ensure that a copy of the manifest is returned to the PROJECT MANAGER by the designated treatment or disposal facility within fourteen (14) days of receipt of the material to be disposed.

3.7 COORDINATION

A. The CONTRACTOR shall at any time provide the CITY with safe access to the Work whenever it is in preparation or progress for the purposes of conducting inspections or collecting samples. The CONTRACTOR may conduct concurrent sampling and analyses, if desired. Results of any such sampling and analysis shall be furnished to the CITY at no cost.

PART 4 PAYMENT

4.1 GENERAL

A. Payment for work in this Section is included as stated in the Bid Form. The CONTRACTOR shall be responsible for appropriate measurement of unit quantity (volume or weight) of waste material removed from the site, and for verification of those quantities with receipt records from the disposal site.

END OF SECTION

SECTION 02315
FILL AND BACKFILL

PART 1 GENERAL

1.1 DEFINITIONS

A. Prepared Ground Surface: Ground surface after completion of required demolition, clearing and grubbing, scalping of sod, stripping of topsoil, excavation to grade, and subgrade preparation.

B. Completed Course: A course or layer that is ready for next layer or next phase of Work.

C. Lift: Loose (uncompacted) layer of material.

D. Geosynthetics: Geotextiles, geogrids, or geomembranes.

E. Well-Graded:

1. A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes.

2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.

3. Used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

F. Influence Area: Area within planes sloped downward and outward at 60-degree angle from horizontal measured from:

1. 1-foot outside outermost edge at base of foundations or slabs.

2. 1-foot outside outermost edge at surface of roadways or shoulder.

3. 0.5-foot outside exterior at spring line of pipes or culverts.

G. Borrow Material: Material from required excavations or from designated borrow areas on or near site.

H. Selected Backfill Material: Materials available onsite that CITY determines to be suitable for specific use.

I. Imported Material: Materials obtained from sources offsite, suitable for specified use.

J. Structural Fill: Fill materials as required under structures, pavements, and other facilities.

K. Embankment Material: Fill materials required to raise existing grade in areas other than under structures.

PART 2 PRODUCTS

2.1 EARTHFILL

A. Excavated material from required excavations and designated borrow sites, free from rocks larger than 3 inches, from roots and other organic matter, ashes, cinders, trash, debris, and other deleterious materials.

B. Material containing more than 10 percent gravel, stones, or shale particles is unacceptable.

C. Provide imported material of equivalent quality, if required to accomplish Work.

2.2 GRANULAR FILL

A. Use graded aggregate base material of uniform quality throughout, substantially free from vegetable matter, shale, lumps and clay balls, and having a Limerock Bearing Ratio value of not less than 100.

B. Aggregates is composed of limestone, marble, or dolomite.

C. Use material retained on the No. 10 sieve composed of aggregate meeting the following requirements:

1. Soundness Loss, Sodium, Sulfate: AASHTO T 104, 15 percent.

2. Percent Wear: AASHTO T 96 (Grading A) 45 percent.

Sieve Size	Percent by Weight Passing
2 inch	100
1-1/2 inch	95 to 100
¾ inch	65 to 90
3/8 inch	45 to 75
No. 4	35 to 60
No. 10	25 to 45
No. 50	5 to 25
No. 200	0 to 10

2.3 WATER FOR MOISTURE CONDITIONING

A. Free of hazardous or toxic contaminates, or contaminants deleterious to proper compaction.

2.4 FOUNDATION STABILIZATION ROCK

A. General: Materials may be either limerock, shell rock, cemented coquina, or shell base sources approved by the Department.

B. Specific Requirements for Limerock: For limerock, carbonates of calcium and magnesium shall be at least 70 percent. Materials having a plasticity index of more than ten or a liquid limit greater than 40 shall not be used as a stabilizer. The gradation of limerock shall be such that 97 percent of these materials will pass a 3- 1/2 inch sieve.

C. Crushed Shell: Crushed shell for this use shall be mollusk shell (i.e., oysters, mussels, clams, cemented coquina). Steamed shell will not be permitted.

1. This shell shall Meet the Following Requirements:

a. Material having a plasticity index of more than ten or a liquid limit greater than 40 shall not be used as a stabilizer.

b. At least 97 percent by weight of the total material shall pass a 3-1/2 inch sieve and at least 50 percent by weight of the total material shall be retained on the No. 4 sieve.

c. Not more than 20 percent by weight of the total material shall pass the No. 200 sieve. The determination of the percentage passing the No. 200 sieve shall be by washing only.

d. In the event that the shell meets the above requirements without crushing, crushing will not be required.

PART 3 EXECUTION

3.1 GENERAL

A. Keep placement surfaces free of water, debris, and foreign material during placement and compaction of fill and backfill materials.

B. Place and spread fill and backfill materials in horizontal lifts of uniform thickness, in a manner that avoids segregation, and compact each lift to specified densities prior to placing succeeding lifts. Slope lifts only where necessary to conform to final grades or as necessary to keep placement surfaces drained of water.

C. During filling and backfilling, keep level of fill and backfill around each structure and buried tank even.

D. If Pipe, Conduit, Duct Bank, or Cable is to be Laid Within Fill or Backfill:

1. Fill or backfill to an elevation 2 feet above top of item to be laid.

2. Excavate trench for installation of item.

3. Install bedding, if applicable, as specified in Section 02320, TRENCH BACKFILL.

4. Install item.

5. Backfill pipe zone and remaining trench, as specified in Section 02320 TRENCH BACKFILL, before resuming filling or backfilling specified in this Section.

E. Tolerances:

1. Final Lines and Grades: Within a tolerance of 0.1 foot, unless dimensions or grades are shown or specified otherwise.

2. Grade to establish and maintain slopes and drainage as shown. Reverse slopes are not permitted.

F. Settlement: Correct and repair any subsequent damage to structures, pavements, curbs, slabs, piping, and other facilities, caused by settlement of fill or backfill material.

3.2 BACKFILL UNDER AND AROUND STRUCTURES

A. Under Facilities: Within influence area beneath structures, slabs, pavements, curbs, piping, conduits, duct banks, and other facilities, backfill with granular fill, unless otherwise shown. Place granular fill in lifts of 6-inch maximum thickness and compact each lift to a density of at least 100 percent of the maximum density as determined by AASHTO T99, Method C.

3.3 FILL

A. Outside Influence Areas Beneath Structures, Pavements, Curbs, Slabs, Piping, and Other Facilities: Unless otherwise shown, place earthfill as follows:

1. Allow for proper thickness of topsoil where required.

2. Maximum 8-inch thick lifts.

3. Place and compact fill across full width of embankment.

4. Compact to a density of at least 80 percent of the maximum density as determined by AASHTO T99, Method C.

5. For the outer layer of all fill where plant growth will be established, DO NOT COMPACT. Leave this layer in a loose condition to a minimum depth of 6 inches.

6. Dress completed embankment with allowance for topsoil, crest surfacing, and slope protection, where applicable.

3.4 SITE TESTING

A. Gradation:

1. One sample from each 1,500 tons of finished product or more often as determined by CITY, if variation in gradation is occurring, or if material appears to depart from Specifications.

2. If test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.

3. Remove material placed in Work that does not meet Specification requirements.

B. In-Place Density Tests: In accordance with AASHTO T99, Method C. During placement of materials, test as follows:

1. Earthfill: One test per 400 feet of pipe run.

2. Granular Fill: One test per 400 feet of pipe run.

3. Foundation Stabilization Rock: One test per lift.

3.5 REPLACING OVEREXCAVATED MATERIAL

A. Replace excavation carried below grade lines shown or established by CITY as follows:

1. Beneath Footings: Granular fill.

2. Beneath Fill or Backfill: Same material as specified for overlying fill or backfill.

3. Beneath Slabs-On-Grade: Granular fill.

4. Trenches:

a. Unauthorized Overexcavation: Either foundation stabilization rock or granular pipe base material, as specified in Section 312343, TRENCH

BACKFILL.

b. Authorized Overexcavation: Foundation stabilization rock.

5. Permanent Cut Slopes (Where Overlying Area is Not to Receive Fill or Backfill):

a. Flat to Moderate Steep Slopes (3 to 1, Horizontal Run: Vertical Rise or Flatter): Earthfill.

b. Steep Slopes (Steeper than 3 to 1):

1) Correct overexcavation by transitioning between over-cut areas and designed slope adjoining areas, provided such cutting does not extend offsite or outside easements and right-of-ways, or adversely impacts existing facilities, adjacent property, or completed Work.

2) Backfilling overexcavated area is prohibited unless, in CITY's opinion, backfill will remain stable and overexcavated material is replaced as compacted earthfill.

END OF SECTION

SECTION 02316
EXCAVATION

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Provide adequate survey control to avoid unauthorized over-excavation.

1.2 WEATHER LIMITATIONS

A. Material excavated during inclement weather shall not be used as fill or backfill until after material drains and dries sufficiently for proper compaction.

1.3 SEQUENCING AND SCHEDULING

A. Clearing and Stripping: Complete applicable Work specified in Section 02200, SITE PREPARATION, prior to excavating.

B. CONTRACTOR shall call the utility companies at least 2 business days before excavation, see Section 01040, COORDINATION for each utility company phone number and contact person.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

A. Excavate to lines, grades, and dimensions shown and as necessary to accomplish Work. Excavate to within tolerance of plus or minus 0.1 foot except where dimensions or grades are shown or specified as maximum or minimum. Allow for forms, working space, granular base, topsoil, and similar items, wherever applicable. Trim to neat lines where concrete is to be deposited against earth.

B. It shall be the CONTRACTOR's responsibility to notify business establishments and residents not less than 72 hours prior to construction. CONTRACTOR shall, wherever necessary, provide temporary sidewalks and driveway entrances at his own expense, including safe bridges over trenches and fencing around excavations for pedestrian protection.

C. Provide adequate survey control to avoid unauthorized overexcavation. Do not over excavate without written authorization of CITY. If the CONTRACTOR excavates beyond the limits shown or specified, the CONTRACTOR shall replace such excavation at his own expense. Replace overexcavated material as specified in Section 02315, FILL AND BACKFILL.

D. Where muck, rock, clay, or other material within the limits of excavation is unsuitable in its original position, excavate such material to the cross-sections shown or specified. Backfill with suitable material and shape to the required cross-section.

E. Remove or protect obstructions as shown on the Drawings.

3.2 UNCLASSIFIED EXCAVATION

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

3.3 TRENCH WIDTH

A. Minimum Width of Trenches:

1. Single Pipes, Conduits, Direct-Buried Cables, and Duct Banks:

a. Less than 4-Inch Outside Diameter or Width: 18 inches.

b. Greater than 4-Inch Outside Diameter or Width: 18 inches greater than outside diameter or width of pipe, conduit, direct-buried cable, or duct bank.

2. Multiple Pipes, Conduits, Cables, or Duct Banks in Single Trench: 18 inches greater than aggregate width of pipes, conduits, cables, duct banks, plus space between.

3. Increase trench widths by thicknesses of sheeting, if used.

4. The maximum trench width shall not exceed the minimum stated width of the trench unless approved by the PROJECT MANAGER. Restoration for excavation beyond the minimum required width shall be at the CONTRACTOR's sole expense.

3.4 EMBANKMENT AND CUT SLOPES

A. Shape, trim, and finish cut slopes to conform to lines, grades, and cross-sections shown, with proper allowance for topsoil or slope protection, where shown.

B. Remove stones and rock that exceed 3-inch diameter and that are loose and may roll down slope. Remove exposed roots from cut slopes.

C. Round tops of cut slopes in soil to not less than a 6-foot radius, provided such rounding does not extend offsite or outside easements and right-of-ways, or adversely impacts existing facilities, adjacent property, or completed Work.

3.5 STOCKPILING EXCAVATED MATERIAL

A. Stockpile excavated material that is suitable for use as fill or backfill until material is needed.

B. Post signs indicating proposed use of material stockpiled. Post signs that are readable from all directions of approach to each stockpile. Signs should be clearly worded and readable by equipment operators from their normal seated position.

C. Confine stockpiles to within easements, rights-of-way, and approved work areas. Do not obstruct roads, streets, public thoroughfares, or access to fire hydrants.

D. Do not stockpile excavated material adjacent to trenches and other excavations unless excavation sideslopes and excavation support systems are designed, constructed, and maintained for stockpile loads.

E. Do not stockpile excavated materials near or over existing facilities, adjacent property, or completed Work, if weight of stockpiled material could induce excessive settlement.

3.6 DISPOSAL OF SPOIL

A. Dispose of excavated materials, which are unsuitable or exceed quantity needed for fill or backfill, offsite.

B. Dispose of debris resulting from removal of organic matter, trash, refuse, and junk as specified in Section 02200, SITE PREPARATION, for clearing and grubbing debris.

END OF SECTION

SECTION 02320
TRENCH BACKFILL

PART 1 GENERAL

1.1 DEFINITIONS

A. Base Rock: Granular material upon which manhole bases and other structures are placed.

B. Bedding Material: Granular material upon which pipes, conduits, cables, or duct banks are placed.

C. Imported Material: Material obtained by the CONTRACTOR from source(s) offsite.

D. Lift: Loose (uncompacted) layer of material.

E. Pipe Zone: Backfill zone that includes full trench width and extends from prepared trench bottom to an upper limit above top outside surface of pipe, conduit, cable or duct bank.

F. Prepared Trench Bottom: Graded trench bottom after excavation and installation of stabilization material, if required, but before installation of bedding material.

G. Selected Backfill Material: Material available onsite that CITY determines to be suitable for a specific use.

H. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes producing a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids. Well-Graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.

PART 2 PRODUCTS

2.1 GEOTEXTILE NOT USED

2.2 MARKING TAPE

A. Plastic:

1. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.
2. Thickness: Minimum 4 mils.
3. Minimum Width: 2 inches.

4. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.

B. Metallic:

1. Solid aluminum foil, visible on unprinted side, encased in a protective high visibility, inert polyethylene plastic jacket.
2. Foil Thickness: Minimum 5.5 mils.
3. Width: 2 inches.
4. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
5. Joining Clips: Tin or nickel-coated furnished by tape manufacturer.

C. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities.

Color	Facility
[a]Red	Electric power lines, cables, conduit, and lightning
Orange	Communicating alarm or signal lines, cables, or conduit
Yellow	Gas, oil, steam, petroleum, or gaseous materials
Green	Sewers and drain lines
Blue	Water, irrigation, and slurry lines
[a]As specified in ANSI Z53.1, Safety Color Code.	

2.3 TRENCH STABILIZATION MATERIAL

A. Foundation stabilization rock as specified in Section 02315, Fill and Backfill.

2.4 BEDDING MATERIAL AND PIPE ZONE MATERIAL

A. Granular fill as specified in Section 02315, Fill and Backfill.

2.5 EARTH BACKFILL

A. Earth fill as specified in Section 02315, Fill and Backfill.

PART 3 EXECUTION

3.1 TRENCH PREPARATION

A. Water Control:

1. As specified in Section 02240 dewatering.
2. Remove water in a manner that minimizes soil erosion from trench sides and bottom.
3. Provide continuous water control until trench backfill is complete.

B. Remove foreign material and backfill contaminated with foreign material that falls into trench.

C. Where the trench has been dewatered, backfilling must be done before the pumps are shut off so that the pipe will not float. Any pipe which has been displaced because of floatation will be removed and installed correctly at the CONTRACTOR's expense.

3.2 TRENCH BOTTOM

A. Firm Subgrade: Grade with hand tools, remove loose and disturbed material, and trim off high areas and ridges left by excavating bucket teeth. Allow space for bedding material if shown or specified.

B. Soft Subgrade: If subgrade is encountered that may require removal to prevent pipe settlement, notify PROJECT MANAGER. PROJECT MANAGER will determine depth of over excavation, if any, required.

3.3 TRENCH STABILIZATION MATERIAL INSTALLATION

A. Rebuild trench bottom with trench stabilization material as directed by the PROJECT MANAGER.

B. Place material over full width of trench in 6-inch lifts to required grade, providing allowance for bedding thickness.

C. Compact each lift so as to provide a firm, unyielding support for the bedding material prior to placing succeeding lifts.

3.4 BEDDING

A. Furnish granular fill or imported bedding material as directed by the PROJECT MANAGER.

B. Place over the full width of the prepared trench bottom in two equal lifts when the required depth exceeds 8 inches.

C. Hand grade and compact each lift to provide a firm, unyielding surface.

D. Minimum thickness from the following depths below the bottom to the springline of the pipe are as follows, except increase depths listed by 6 inches in areas of rock excavation:

1. Pipe, 15 Inches and Smaller: 4 inches.
2. Pipe, 18 Inches to 36 Inches: 6 inches.
3. Pipe, 42 Inches and Larger: 8 inches.
4. Conduit: 3 inches.
5. Direct-Buried Cable: 3 inches.
6. Duct Banks: 3 inches.

E. Check grade and correct irregularities in bedding material. Loosen top 1 to 2 inches of compacted bedding material with a rake or by other means to provide a cushion before laying each section of pipe, conduit, direct-buried cable, or duct bank.

F. Install to form continuous and uniform support except at bell holes, if applicable, or minor disturbances resulting from removal of lifting tackle.

G. Bell or Coupling Holes: Excavate in bedding at each joint to permit proper assembly and inspection of joint and to provide uniform bearing along barrel of pipe or conduit.

3.5 BACKFILL PIPE ZONE

A. Furnish granular fill as described in Section 312010 Fill and Backfill or imported bedding material as directed by the PROJECT MANAGER from pipe springline to 12 inches above the top of the pipe.

B. Upper Limit of Pipe Zone Shall Not Be Less Than Following:

1. Pipes:
   a. Up to 12-Inch Diameter: 6 inches above top of pipe.
   b. Greater than 12-Inch Diameter: 12 inches above top of pipe, unless shown otherwise.
2. Conduit: 3 inches, unless shown otherwise.
3. Direct-Buried Cable: 3 inches, unless shown otherwise.
4. Duct Bank: 3 inches, unless shown otherwise.

C. Restrain pipe, conduit, cables, and duct banks as necessary to prevent their movement during backfill operations.

D. Place material simultaneously in lifts on both sides of pipe and, if applicable, between pipes, conduit, cables, and duct banks installed in same trench.

1. Pipes 10 Inches and Smaller Diameter: First lift less than or equal to 1/2 pipe diameter but not less than 3 inches. .
2. Pipes Over 10-Inch Diameter: Maximum 6-inch lifts.

E. Thoroughly tamp each lift, including area under haunches, with handheld tamping bars supplemented by “walking in” and slicing material under haunches with a shovel to ensure that voids are completely filled before placing each succeeding lift. Compact material in pipe zone to at least 98 percent maximum density as determined by AASHTO T180.

F. After the full depth of the pipe zone material has been placed as specified, compact the material by a minimum of three passes with a vibratory plate compactor only over the area between the sides of the pipe and the trench walls. CONTRACTOR shall exercise proper care to ensure that no pipe joints will be broken, damaged, or disturbed through the use of any compacting equipment.

G. Do not use power-driven impact compactors to compact pipe zone material.

H. Where approved by the CITY, hydraulic compaction of the pipe zone material and granular trench backfill may be used providing density testing requirements are met. A submittal describing the method of hydraulic compaction will be required.

3.6 MARKING TAPE INSTALLATION

A. Continuously install marking tape along centerline of all buried piping, on top of last lift of pipe zone material. Coordinate with piping installation drawings.

1. Metallic Marking Tape: Install with nonmetallic piping and waterlines.
2. Plastic Marking Tape: Install with metallic piping.

3.7 BACKFILL ABOVE PIPE ZONE

A. General:

1. Process excavated material to meet specified requirements for earthfill as described in Section 02315 Fill and Backfill.

2. Adjust moisture content as necessary to obtain specified compaction.

3. Do not allow backfill to free fall into the trench or allow heavy, sharp pieces of material to be placed as backfill until after at least 2 feet of backfill has been provided over the top of pipe.
4. Do not use power driven impact type compactors for compaction until at least 4 feet of backfill is placed over top of pipe.
5. Backfill to grade with proper allowances for topsoil, crushed rock surfacing, and pavement thicknesses, wherever applicable.
6. Backfill around structures with same class backfill as specified for adjacent trench unless otherwise shown or specified.
7. Hydraulic compaction may be allowed based upon approval by the PROJECT MANAGER of the CONTRACTOR's detailed compaction and testing procedures.

B. Backfill for Areas in Landscaped Areas:

1. Place in lifts not exceeding 12-inch thickness.

2. Mechanically compact each lift to a minimum of 80 percent of the maximum density as determined by AASHTO Method T-180 prior to placing succeeding lifts.

C. Backfill for Areas Under Facilities and Pavements: Backfill trench above the pipe zone with suitable earthfill in lifts not exceeding 12 inches. Compact each lift to a minimum of 98 percent of the maximum density compaction as determined by AASHTO Method T180, 100% for Broward County rights of way, prior to placing succeeding lifts. If density cannot be achieved with earthfill, suitable granular fill will be required.

3.8 ALTERNATE METHOD OF CONSTRUCTION

A. When high water tables, porous soils or other limitations to dewatering are encountered, the CONTRACTOR may request the approval of the CITY for an alternate method of construction.

B. Use of alternative methods shall not relieve the CONTRACTOR of the work, result in increased costs to the CITY or reductions in the quality of the work as defined by testing and acceptance requirements.

C. Removal of water requirements will be waived and the pipe and appurtenances will be permitted to be installed underwater.

D. Excavation shall be performed in accordance with Section 02316, Excavation, to the specified limits. The excavation shall be cleared of silt and other fines.

E. Pipe bedding shall be placed from the bottom of the excavation to 6 inches above the top of the pipe. The bedding shall be granular fill as described in Section 02315 Fill and Backfill.

F. Select backfill material shall be used to backfill the trench from the top of the bedding to a level 1 foot above the standing water level in the trench. Select material shall be granular fill as described in Section 02315, Fill and Backfill. This lift shall be compacted in accordance with the provisions of this Section after which the remainder of the backfill can proceed as normal.

G. If the above described method is used, all backfill material used below the water table shall not be released into the trench until the bucket or container is less than 1 foot above the water level. Pipe bedding and pipe zone material as defined above shall not be dumped or pushed into the trench.

3.9 MAINTENANCE OF TRENCH BACKFILL

A. After each section of trench is backfilled, maintain the surface of the backfilled trench even with the adjacent ground surface until final surface restoration is completed.

B. Other Areas: Add excavated material where applicable and keep the surface of the backfilled trench level with the adjacent ground surface.

C. Water shall be applied to the unstabilized trench backfill to control dust as directed by the CITY.

D. Placement of lime rock base course and prime coat shall occur no longer than 5 days following trench backfill or as soon thereafter as record information is available to verify that pipe inverts and slopes are acceptable.

3.10 SETTLEMENT OF BACKFILL

A. Settlement of trench backfill or of fill or facilities constructed over trench backfill within the warranty period for the project will be considered a result of defective compaction of trench backfill.

END OF SECTION

SECTION 02410
FLOW BYPASS PUMPING SYSTEM

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

A. Performance Requirements

1. It is essential to the operation of the existing sewage system that there is no interruption in the flow of sewage throughout the duration of the Project. CONTRACTOR shall provide, maintain, and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and backup units as required), conduits, and all necessary power to intercept the stormwater flow before it reaches the point where it would interfere with the Work, carry it past the Work, and return it to the existing sewer downstream of the Work.

2. Design, install and operate the temporary pumping system.

3. Convey the stormwater safely past this Work area. Do not stop or impede the main flows under any circumstances.

4. Maintain sewer flow around the Work area in a manner that will not cause surcharging of sewers, damage to sewers, and that will protect public and private property from damage and flooding.

5. Protect water resources, wetlands and other natural resources.

B. Design Requirements:

1. Provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the sewer can be safely diverted around the section to be replaced. The system operating pressure shall be as required to pump into the system.

2. Install one bypass pump at each drainage structure to be bypassed. There shall be one back-up pump ready for immediate use in the event of any emergency or breakdown of any of the pumps. Each pumping location shall have provisions for immediate installation of a redundant pump without shutting the system down.

3. Single discharge piping shall be provided for all bypass pumping operations. Each individual discharge pipeline shall be of adequate size to convey the required flow for the system's normal operating pumps.

4. Prevent unauthorized access to the bypass pumping equipment, withdrawal drainage structure and discharge drainage structure.

5. To minimize odors, install the discharge piping to within 2 feet of the drainage structure bottom and provide lockable security covers with an inspection door over all section and discharge structures. Covers can be made of ¾ inch plywood, securely fastened over the drainage structures.

6. If Work has been scheduled and approved by CITY to be conducted at night, maintain onsite portable lights for emergency use only.

7. Discharge must have an isolation valve and a check valve.

8. Pump station cleanouts shall not be used for bypass pumping.

1.2 SUBMITTALS

A. Shop Drawings: Detailed plans and descriptions outlining all provisions and precautions regarding the handling of existing stormwater flows. This plan must be specific and complete including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and / or required to ensure proper protection of the facilities, including protection of public and private property from damage and flooding by surcharging of sewers. The plan shall include, but not be limited to details of the following:

1. Staging area for pumps

2. Sewer plugging method and types of plugs.

3. Size, material, location and method of installation of suction piping.

4. Size, material, method of installation, and location of installation of discharge piping.

5. Bypass pump sizes, capacity and power requirements.

6. Calculations of static life, friction losses and flow velocity (pump curves showing pump operating range shall be submitted).

7. Downstream discharge plan

8. Method of protecting discharge drainage structures from surface water infiltration, erosion and damage.

9. Pipe restraint methods and locations

10. Section showing any suction and discharge pipe depth, embedment, select fill and special backfill where required.

11. Method of noise control for each pump.

12. Any temporary pipe supports and anchoring required.

13. Plans for access to bypass pumping location.

14. Calculations for selection of bypass pumping pipe size.

15. Schedule for installation of and maintenance of bypass pumping lines.

16. Plan indicating selected location of bypass pumping line and air valve locations.

17. Inventory of disinfection materials in case of spillage.

B. Quality Control Submittals:

1. Certification of vendor's compliance with qualifications included in article QUALITY ASSURANCE.

2. Weekly maintenance and inspection logs.

1.3 QUALITY ASSURANCE

A. System operators to be full-time employees or specialized vendor with minimum 1 year experience in operating and maintaining bypass systems.

1. Provide five references from project of similar size performed in the past 3 years.

B. Be responsible for any spillage that results in civil or criminal charges from any local, state or federal agency. Bear costs for these charges and any required restoration.

1.4 MAINTENANCE

A. Maintenance Service: Ensure that the temporary pumping system is properly maintained and that a responsible operator is present at the site at all times when pumps are operating.

B. Extra Materials: Spare parts for pumps and piping shall be kept onsite as necessary. Spare parts shall include, but not be limited to the following: Extra pipe for each size and repair materials for each bypass discharge line installed and backup pump.

C. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

PART 2 PRODUCTS

2.1 BYPASS PIPING MATERIALS

A. Header Piping: Header piping shall be used to connect the pumps to the discharge piping. The header shall be constructed of rigid pipe with positive, restrained joints with a total maximum length of 50 feet. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Header piping will only be allowed in short sections and by specific permission from the PROJECT MANAGER or CITY.

B. Discharge Piping: Discharge piping shall be used from the connection at the header piping to the discharge point. Discharge piping and fittings shall be PVC pressure Class 100 conforming to AWWA C-900 standards. At the beginning of the Project, all discharge piping shall be new or shall be successfully pressured testing at 1.5 times the maximum discharge pressure of the pumping system to be used for bypass pumping. Pressure test shall be conducted in the presence of a registered professional engineer in the state of Florida. Said engineer shall submit a report to the PROJECT MANAGER stipulating the materials, methods and results of the test and recommendation for safe and reliable use on this project. Discharge piping may be re-used for subsequent flow bypass pumping system placements however, the CITY or PROJECT MANAGER at their sole discretion shall have the right to reject sections of discharge piping deemed by either of them to be unserviceable.

2.2 EQUIPMENT

A. All pumps used shall be fully automatic self priming units that do not require the use of foot valves or vacuum pumps in the priming system. The primary and secondary pumps may either be electric or diesel. Pumps can be trailer mounted. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of flows.

B. Provide the necessary stop / start controls and a visual alarm indicating a pump malfunction for each pump.

C. The back- up pump shall be online, isolated from the primary system by a valve.

D. Incorporate noise prevention measure for any and all equipment being used to insure minimum noise impact on the surrounding areas. If permission has been granted to the CONTRACTOR by CITY to work beyond normal work hours, the following provisions shall be followed:

1. Include: hospital grade silencers or mufflers, equipment modifications and special equipment or sound barrier walls as necessary to limit noise levels below 55 decibels at a distance of 25 feet in the direction of any residential home for all diesel powered back up pumps.

2. In the event the CONTRACTOR fails to comply with maximum permissible noise level decibels in the operation of the flow bypass pumping system, the CITY or PROJECT MANAGER may order the CONTRACTOR to stop operation of the flow bypass pumping system until such time as specified noise levels are achieved. The termination of the flow bypass pumping system for such reason shall not be the basis for any extension of Contract time nor for any claim for additional compensation.

PART 3 EXECUTION

3.1 PREPARATION

A. Precautions:

1. Locate any existing utilities in the area selected to locate the bypass pipelines. Locate bypass pipelines to minimize any disturbance to existing

utilities, traffic and pedestrian access and obtain approval of the pipeline locations from CITY, property owners, all utilities, and the PROJECT MANAGER prior to installation.

2. Bypass pump all stormwater flows as necessary while performing Work and coordinate all bypass pumping operations with the PROJECT MANAGER .

3.2 INSTALLATION

A. Plugging or blocking of stormwater flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits the stormwater flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

B. When working inside drainage structures, exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres and confined spaces.

C. The bypass pipeline must be located off streets, sidewalks and shoulders of the roads. CONTRACTOR must obtain CITY's approval for method(s) used when the bypass pipeline crosses local streets and private driveways. Maintenance of traffic shall be in accordance with Section 010010, GENERAL REQUIREMENTS. Obtain approvals for placement of the temporary pipeline within public rights-of-ways.

D. Protect the bypass discharge line from damage in the areas of backhoe operations. Protection shall be by either concrete jersey barriers, water filled barriers or wood timbers.

E. Confine the bypass discharge pipeline to the area within the temporary construction area and permanent easement. Concrete barriers or timber deadman posts can be used to confine the movement of the discharge pipeline during relocation.

3.3 FIELD QUALITY CONTROL

A. Test: Perform a hydrostatic pressure test for each section of discharge piping with a maximum pressure equal to 1.5 times the maximum operating pressure of the system. The PROJECT MANAGER or CITY shall witness the test to ensure that there are no leaks in the discharge piping prior to actual operation.

B. Bypass pumping shall be prohibited unless lining activities are actively being performed. Bypass pumping shall be supervised continuously by qualified onsite personnel during bypass operation.

3.4 CLEANING

A. Stormwater remaining in the bypass discharge pipeline and / or pumping equipment shall be flushed with city water and discharged to a working sewer before the bypass pumping system is broken down and moved to the next section. City water service must be protected by use of a backflow preventer.

B. Disturbed area: Upon completion of the bypass pumping operation, clean up all areas disturbed by these operations, restoring same to a condition, including pavement restoration, at least equal to that which existed prior to the start of the Work.

END OF SECTION

SECTION 02481
TREE RELOCATION AND PROTECTION

PART 1 GENERAL

1.01 WORK TO BE PERFORMED AND WORK INCLUDED

A. Provide the Following:

1. Prepare and relocate trees and palms designated for relocation within the project boundaries, to include all aspects of preparation, relocation, protection, and maintenance

2. Protection and care of existing trees and palms to remain within the project boundaries, to include all aspects of protection, pruning, fertilization, and watering

3. Watering by water truck

4. Follow up maintenance as required by these Specifications

5. Labor, materials, equipment, and services to complete all preparation, relocations and protection work as shown on the Drawings, as specified herein, or both

1.02 RELATED WORK

A. Section 02315, Fill and Backfill

B. Section 02911, Soil Preparation

C. Section 02920, Sodding

D. Section 02930, Trees, Plants, and Groundcovers

1.03 SUBMITTALS

A. Submit the Following:

1. Verification of Qualifications: The Contractor shall provide a list of references and project list of a minimum of 5 projects that the Contractor has successfully completed that are similar in scope and nature.

2. List of all equipment to be utilized during tree preparation and transplanting.

3. Literature on specified wetting agents, fertilizers, and soil conditioners.

1.04 APPLICABLE STANDARDS AND SPECIFICATIONS

A. Comply with the following standards and specifications for all materials, methods, and workmanship unless otherwise noted:

1. Codes and Standards of the American Association of Nurserymen

2. Codes and Standards of the National Arborists Association

3. Codes and Standards of the International Society of Arboriculturists

1.05 PERMITS

A. The CONTRACTOR shall secure and pay for any permits, including tree relocation permits, required in order to complete the work under this Section.

1.06 DESCRIPTION

A. Trees to be relocated within the project area will be specifically designated in the field as project work progresses.

B. Existing trees to be relocated shall be crown pruned and be treated with soil amendments prior to relocation.

C. Existing trees to be relocated or to remain shall be protected with barricades during construction. Trees or shrubs to remain which are scarred or destroyed shall be replaced at the direction of the City Forester with the same species, size, and quality at no cost to the CITY.

D. Tree pits resulting from relocated material shall be backfilled with clean fill and brought flush with surrounding grade.

1.07 GUARANTEES

A. The CONTRACTOR Shall Guarantee His Work in the Following Way:

1. Any tree or palm that dies or is deemed in unacceptable condition for one year following final project acceptance shall be removed by the Contractor, including root ball, and backfilling of pit, at no cost to the CITY.

2. The Contractor shall provide a comparable specimen at no additional cost to the City.

3. The guarantee shall be enforced if it is deemed by the City Forester that tree mortality or decline is a product of negligence by the CONTRACTOR.

PART 2 PRODUCTS

3.01 SOIL AMENDMENTS

A. Root stimulant shall be Roots Biostimulant, concentrate or powder, as manufactured by LISA Products Corp., (305) 797-6801, or City-approved equal. Stimulant shall be applied either as a wash, or by injection, mixed per manufacturer's recommendation.

B. Soil conditioner shall be Lesco Wet, as manufactured by Lesco, Inc. or NoburN, as manufactured by Roots.

C. Minor element liquid fertilizer mix shall be Micro Mix liquid as produced by Lesco, Inc., or equal; to be diluted at a rate of 1 gallon per 100 gallons of water and applied at a rate of 50 gallons per 1,000 square feet of canopy, or Iron Roots, applied per manufacturer's instructions.

D. Time Release Fertilizer tablets shall be Agriform, 15 grams, designation 8-8-8; or approved equal.

3.02 EQUIPMENT

A. Soil amendments shall be injected into the soil by means of a spray apparatus utilizing mechanical agitation to keep powdered amendments suspended.

B. Root pruning equipment shall be designed for this task, and shall produce clean cuts of roots without damage to the resulting root ball.

C. Relocation equipment shall be capable of lifting and transporting trees without damage.

3.03 SOIL

A. Soil to be placed once trees or palms are transplanted shall meet the requirements specified in Section 02911, Soil Preparation.

3.04 WATER

A. Water shall be clean and potable, from municipal Fort Lauderdale source, or from onsite wells.

3.05 MULCH

A. Grade A Eucalyptus mulch as supplied by Action Nursery Products, Inc., Fort Myers, Florida, 1-800-433-2050, or approved equal, and shall be free of viable weed seeds.

3.06 BRACING AND STAKES

A. All bracing and stakes shall be pressure treated pine. Compression bands shall be stainless steel.

PART 3 EXECUTION

5.01 EXCAVATING NEAR EXISTING TREES

A. Maintain a minimum 6-foot clearance from all tree trunks except palm trees.

B. Use a 24-inch minimum depth saw cut in pavement or dirt/gravel roadway before start of excavation in areas where there are large trees close to the construction area. No coating application is required after saw cutting roots.

5.02 PREPARATION FOR RELOCATION OF TREES AND PALMS WITHIN THE PROJECT BOUNDARIES

A. Crown Pruning: All trees and palms shall be crown pruned prior to relocation.

1. Broadleaf Trees:

a. All trees are to be trimmed by thinning the crown only, and not by reducing crown dimensions. Trim to conform to NAA standards, including removal of dead wood.

b. Repair any existing injuries to trees including cavities and machinery marks.

2. Palms:

a. Remove all fruits and seed pods, and all but the 7 youngest fronds.

b. Tie all remaining fronds with untreated cotton twine or burlap straps.

B. Fertilization and Watering:

1. Preparation: Clear the root ball area of all foreign material, trash, etc., to expose undisturbed soil.

2. Application/Schedule:

a. Trees shall be deep injection fertilized a minimum of 14 days prior to relocation. Specified liquid fertilizer shall be used and applied at the concentration and application rates stated herein.

b. Mix wetting agent, biostimulant, and minor element mix to produce a single fluid with each component included at the specified concentration. Inject into the root zone within the limits of proposed root ball at the rate of 50 gallons fluid per 1,000 square feet of tree canopy, using only approved spray equipment.

c. Form an earth berm 6 inches high outside the proposed root ball prior to watering. Water application shall saturate the root ball to its entire depth.

C. Root Pruning:

1. Technique:

a. All trees shall be excavated by digging a trench a minimum of 36 inches deep by 6 inches wide, either by hand or with a trenching machine designed for this purpose. Provide continuous trenching around the tree or palm at a minimum distance of 30 inches from the trunk. Hand cut broadleaf tree roots after trenching to produce clean cuts with no splits or tears.

b. Barricades: Barricade all root pruned trees and palms at outside of soil berm with minimum 4-foot chain link fence or other barricade approved by the City.

c. Timing:

1) All oaks to be relocated shall be maintained for a minimum of 10 weeks after root pruning prior to relocation.

2) Palms shall be maintained a minimum of 4 weeks prior to relocation.

5.03 RELOCATION OF TREES AND PALMS

A. General:

1. Trees to be relocated shall be as directed by the PROJECT MANAGER.

2. Trees range in size from 2 inches to approximately 6 inches diameter.

3. Trees are primarily live oaks, palms, and Gumbo Limbo.

B. Preparation:

1. Trees and palms shall be injected with soil amendments a minimum of 14 days prior to relocation. Apply at manufacturer's recommended concentration and application rates.

2. Trees and palms shall be thoroughly soaked to the full depth of the root ball daily for 7 consecutive days prior to relocation.

3. Accurately locate position and elevation where all trees are intended to be planted, for verification by City Forester. Verify that no overhead or underground utilities, existing or proposed, conflict with proposed locations.

4. Ascertain that all proposed paths for machinery are clear of utilities and other obstructions.

C. Excavation of Tree Pits: Dig all pits with vertical sides and flat bottom. Existing soil may be utilized as backfill as directed by the City Forester.

D. Digging and Handling - Broadleaf Trees:

1. Notify City 2 business days in advance of each relocation to allow for observation of procedures.

2. Determine line of previous root pruning and excavate around root mass to leave area 12 inches out from line of root pruning undisturbed. Digging shall be accomplished so as to produce clean cuts on all roots without tearing or splitting. Trenching shall be a minimum of 36 inches deep.

3. Trees are to be handled in such a way as to avoid damage to bark and limbs subject to support cables or chains. Attach padded support cables or chains at multiple points where possible. Alternatively, tree trunks may be drilled and doweled for broadleaf trees. The City Forester reserves the right to require doweling in lieu of lifting by straps.

4. Root balls are to be undercut prior to lifting. Do not force tree from ground prior to undercutting. Ball depth to be determined upon assessing conditions at time of trenching, to keep intact the entire root ball.

5. Trees shall be properly wrapped during moving so trunks will not be scarred and damaged and to avoid broken limbs. Broken limbs or scarred trunks shall cause tree to be unacceptable and rejected at the City's option. Broken limbs and wounds which do not (in the judgment of the City Forester) cause the tree to be rejected shall be cleanly cut.

6. Transport plant material on vehicles of adequate size to prevent overcrowding, broken limbs, foliage damage or root ball damage.

7. Root balls and foliage shall be kept moist during all phases of relocation.

8. Partially backfill tree pits with 12 inches of approved planting soil prior to setting tree. This layer of soil to be thoroughly drenched prior to relocation to achieve a stable platform at the correct elevation so that the top of rootball is 1 inch above proposed grade.

9. Rotate tree prior to setting to achieve best positioning relative to adjacent trees and viewing angles.

E. Backfilling:

1. Flood bottom soil layer to settle tree into best position and to remove air pockets

2. Continue to flood root ball as planting soil is deposited to ensure removal of all air pockets

3. Create a saucer to retain water

F. Bracing:

1. Support tree with machinery until bracing is complete.

2. Buttresses may support separate trunks on multiple trunk trees.

3. Maintain braces until completion of project. Removal of braces shall be by others.

G. Watering: Relocated trees shall by watered using water-truck. Watering schedule shall be: once per day for first 6 weeks; followed by 3 times per week for following 6 weeks.

END OF SECTION

SECTION 02575
SURFACE RESTORATION

PART 1 GENERAL

1.1 STANDARD SPECIFICATIONS

A. When referenced in this Section, shall mean Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, current edition.

1.2 INTENT

A. Specific surface restoration requirements are detailed in this and other sections.

B. For pipeline projects, the intent of these Specifications and the criteria of Section 01025, MEASUREMENT AND PAYMENT, is that the roadway, adjacent right-of-way, and properties affected by construction activity shall be returned to their pre-existing condition, unless otherwise indicated by these Contract Documents.

1. For pipelines constructed in the right-of-way between the sidewalk and edge of pavement, the ground surface will be graded into a swale as shown on the Drawings and provided with sod.

a. Argentine Bahia sod will be used for areas without irrigation systems, except where St. Augustine turf existed previously.

b. St. Augustine “Floritam” sod will be used for areas with irrigation systems and in locations with similar, existing turf.

c. Seashore Paspalum sod will be used for areas that require seawater tolerant sod.

2. Driveways and sidewalks will be placed in kind, using similar materials of construction.

3. Trees, shrubs, and personal property (e.g. mail boxes) located in the swale area shall be relocated or replaced in kind, in accordance with the provisions of these Specifications.

C. For work areas disturbed by the CONTRACTOR for convenience, the area affected shall be restored in kind.

1. The costs of this restoration shall be incidental to the cost of the Work.

2. Payment for restoration outside the limits of work shall be repaired at the Contractor’s expense.

1.3 WORK INCLUDED

A. This Section covers the Work necessary to replace all pavement, curbs, sidewalks, rock surfacing, and other street features removed or damaged either directly or indirectly by the operations incidental to the construction described in other sections of these Specifications.

B. Where the materials, construction procedures, degree of compaction of materials, and the method of control and testing, as required in these Specifications differ from the Standard Specifications requirements, the more stringent requirements shall apply.

C. Provide finished gradation and grassing for all areas directly or indirectly disturbed by lining activities.

1.4 OPTIMUM MOISTURE CONTENT

A. "Optimum moisture content" shall be determined by the ASTM standard specified to determine the maximum dry density for relative compaction. Field moisture content shall be determined on the basis of the fraction passing the 3/4-inch sieve.

1.5 TEMPORARY TRENCH REPAIR OR STABILIZATION

A. Following pipe installation and prior to permanent trench repair or asphalt replacement, temporary trench repair will be defined as one of the following:

1. Installation of flowable fill as described in this Section and FDOT Standard Specifications.

2. Installation of the compacted base course and prime coat as described in this Section.

PART 2 PRODUCTS

2.1 GENERAL

A. All materials for replacement of existing base course and asphalt surfacing shall conform to the Standard Specifications except as modified herein.

B. The CONTRACTOR will be responsible for furnishing satisfactory materials that meet the Specifications and shall provide such tests during the course of the work as are necessary to assure that the quality of the material used meets the Specifications.

2.2 LIME ROCK BASE COURSE

A. Aggregate quality and gradation shall meet the requirements of Section 911 of the Standard Specifications.

2.3 BITUMINOUS PRIME AND TACK COAT

A. Prime Coat: Material shall be cutback asphalt, Grade RC-70 or RC-250 meeting the requirements of Section 916-2 of the Standard Specifications, or approved equal.

B. Tack Coat: Material shall be emulsified asphalt, Grade RS-2, SS-1, or SS-1H meeting the requirements of Section 916-4 of the Standard Specifications.

2.4 ASPHALT CONCRETE

A. The asphalt concrete for trench leveling, restoration and overlay shall be Type S-III or SP-9.5 (coarse), meeting the requirements of Section 334 of the Standard Specifications.

B. Aggregate: The aggregate shall meet the requirements of Section 334 of the Standard Specifications.

C. Submit test results from commercial testing laboratories to the PROJECT MANAGER to show that the materials meet the quality and gradation requirements.

2.5 FLOWABLE FILL

A. Provide flowable fill with a mix design meeting the requirements of Section 121 of the (FDOT) Standard Specifications for excavatable, flowable fill. Flowable fill may be allowed as a substitute for compacted base upon approval of the CITY, at no additional cost.

2.6 CONCRETE

A. Concrete shall be 3,000 psi minimum concrete meeting the requirements of Section 345 of the Standard Specifications.

B. Concrete Forms: All forms for curbs and sidewalks shall be either 2-inch dimensioned lumber, plywood, or metal forms. Forms on the face of the curb shall have no horizontal form joints within 7 inches of the top of the curb.

C. Curing Compound: Meeting the requirements of Section 925 of the Standard Specifications.

D. Reinforcing Steel: Conform to ASTM A615, Grade 60.

2.7 TRAFFIC MARKINGS

A. All traffic striping markings (i.e., lane, edge of pavement, directional, informational, etc.) damaged by the CONTRACTOR during construction shall be replaced with new painted items in meeting the requirements of Section 971 of the Standard Specifications.

B. Raised reflective pavement markers (rpm's) damaged by the CONTRACTOR during construction shall be replaced with new rpm's meeting the requirements of Section 706 of the Standard Specifications.

C. The CONTRACTOR shall place and maintain temporary striping markings throughout the course of the work until the permanent striping marking is placed on the final roadway surface.

D. The CONTRACTOR shall provide painted traffic stripping at all intersections including stop bars and crosswalks as required whether they are currently stripped or not. It shall be the CONTRACTOR's responsibility to take a complete inventory and provide the appropriate permanent stripping after the completion of the work.

2.8 SWALE STABILZATION

A. Materials used for stabilization of swale areas as indicated on the Drawings shall consist of suitable excess existing base material removed from trenching operations, if approved by the CITY, crushed limerock, rock screenings, or other suitable material as approved by the CITY.

1. Materials having a plasticity index of more than 10, or a liquid limit greater than 40 shall not be used.

2. Maximum dimension shall not exceed 1.5 inches.

PART 3 EXECUTION

3.1 CONSTRUCTION PROCEDURE

A. The CITY reserves the right to vary the type of resurfacing as best serves the interest of the CITY. Trench backfill shall be as specified in Section 02315 FILL AND BACKFILL.

B. Replace all bituminous and concrete roadway pavement damaged or removed under this Contract with asphalt concrete regardless of original type. Pavement thickness shall be in accordance with the Drawings.

C. In addition to the requirements set forth herein, the work shall conform to the applicable workmanship requirements of the state and county highway or municipal specifications.

D. Water to control dust shall be used as directed by the CITY until the trench repair has been stabilized.

E. Base course and prime coat shall be installed to provide temporary trench stabilization within 5 working days of trench backfill or as soon thereafter as the as-built conditions and pipe slopes have been verified.

F. Final, permanent trench repair, and paving shall be installed within 3 weeks of pipe verification and temporary trench stabilization, unless flowable fill is used for temporary trench repair, in accordance with the provisions of this Section.

G. All surface features (e.g. mail boxes, fencing) that need to be relocated or removed for the time of construction shall be carefully store and then reinstalled back to existing or better conditions after construction is completed.

3.2 CUTTING EXISTING PAVEMENT

A. Where new pavement abuts existing pavement, the old pavement shall be trimmed by saw cutting to a straight line. Any pavement which has been damaged or which is broken and unsound shall be removed to provide a smooth, sound edge for joining new pavement.

3.3 STREET MAINTENANCE

A. Maintain all trenches as specified under Section 02316, EXCAVATION.

3.4 CONSTRUCTION OF BASE COURSE

A. Base course shall be constructed in accordance with Section 200 of the Standard Specifications.

B. Compact base materials to a minimum of 98 percent of the maximum density as determined by AASHTO T180. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the CITY. Where the base is constructed in more than one course, the density shall be obtained in each lift.

C. Alternately, at no additional cost and with the approval of the CITY, the CONTRACTOR shall provide a minimum 10 inches of 250 psi flowable fill. The flowable fill shall be placed up to 1 ½ inches from the top of the existing pavement. Flowable fill installed in accordance with this provision shall comply with temporary pavement restoration provisions.

3.5 MILLING OR GRINDING OF EXISTING ASPHALT PAVEMENT

A. Milling of existing asphalt pavement shall meet the requirements of Section 327 of the Standard Specifications.

B. Milling shall be used to lower the grade of adjacent existing asphalt prior to trench repair to completely remove existing asphalt.

C. Milled and ground asphalt can be mixed for use with the limerock base course material.

3.6 BITUMINOUS PRIME AND TACK COAT

A. The bituminous prime coat shall be applied to the lime rock base immediately following the placement of the compacted base course. The prime coat shall be maintained with additional coats as determined by the CITY as temporary restoration until the final asphalt surface is installed. Additional prime coats will be provided at no cost to the CITY.

B. The lime rock base shall be hard planed with a blade grader immediately prior to the application of the prime coat.

C. The rate of application of the bituminous prime coat shall meet the requirements of Section 916-2 of the Standard Specifications.

D. The bituminous tack coat shall be applied to existing asphalt surfaces prior to the placement of new asphalt, between layers of asphalt concrete surface courses, surfaces of concrete footings that will come in contact with the asphalt concrete pavement, and vertical faces of all longitudinal and transverse joints that have become compacted or cooled.

E. The rate of application for the bituminous tack coat shall meet the requirements of Section 916-4 of the STANDRAD SPECIFICATIONS.

3.7 ASPHALT CONCRETE PAVEMENT REPLACEMENT

A. Preparation for Paving:

1. A prime coat shall be applied over the full length of the roadway, and asphalt concrete pavement shall not be placed until the prime coat has cured as per the manufacturer's recommendations.

2. Should any holes, breaks, or irregularities develop in the roadway surface after the prime coat has been applied, they shall be patched with asphalt concrete immediately in advance of placing the asphalt concrete.

3. After the maintenance, patching, or repair work has been completed and immediately prior to placing the asphalt concrete pavement, the surface of the prime coat shall be swept clean of all dirt, dust, or other foreign matter.

B. The proposed pavement reconstruction schedule consists of immediately paving over trenches as soon as possible after it has been determined that subbase and base have achieved required compactions. The base course will be brought up to the elevations indicated on the Drawings and asphalt placed to bring grade up to match existing pavement elevations as shown on the Drawings.

C. For deep excavations where the pavement repair constitutes a full lane or roadway, workmanship shall conform to the standards and details of new road way construction.

1. Existing pavement less than 2-foot wide shall be removed or milled for base material.

2. Full lane or width roadways shall have a consistent cross-section and straight edge of pavement delineation's.

3.8 CONSTRUCTION OF ASPHALT CONCRETE PAVEMENT OVERLAY – IF REQUIRED

A. The CONTRACTOR shall place a layer of tack coat at a rate of 0.05 to 0.12 gallon per square yard over all areas to receive asphalt concrete.

B. Lay asphalt concrete over all areas designated to be resurfaced. The asphalt concrete pavement overlay shall be placed in two ¾-inch lifts to a compacted depth of 1-1/2 inches or as shown on the Drawings. The method of proportioning, mixing, transporting, laying, processing, rolling the material, and the standards of workmanship shall meet the applicable requirements of Sections 320, 330, and 331 of the Standard Specifications. At no time shall the coarse aggregate segregated from the mix either from hand spreading or raking of joints be scattered across the paved mat. Such material shall be collected and disposed of.

C. The CITY will examine the prepared roadway before the paving is begun and bring any deficiencies to the CONTRACTOR's attention to be corrected before the paving is started. Roll each lift of the asphalt concrete until roller marks are eliminated and compacted to 100 percent of the laboratory compacted mixture.

The grade, line, and cross section of the finished surface shall conform to the Drawings. Asphalt or asphalt strains which are noticeable upon surfaces of concrete or materials which will be exposed to view shall be promptly and completely removed.

3.9 ASPHALT CONCRETE PAVEMENT

A. Workmanship in producing, hauling, placing, compacting, and finishing asphalt concrete shall meet the applicable portions of the Standard Specifications.

3.10 CONNECTIONS WITH EXISTING FACILITIES

A. Where the bituminous pavement is to be connected with an existing roadway surface or other facility, the CONTRACTOR will be required to modify the existing roadway profile in such a manner as to produce a smooth riding connection to the existing facility. The CONTRACTOR shall meet existing neat lines where required.

B. Where it is necessary to remove existing asphalt surfaces or oil mat surfaces to provide proper meet lines and riding surfaces, the CONTRACTOR shall sawcut the existing surface so that there will be sufficient depth to provide a minimum of 1 inch of asphalt concrete, and the waste material shall be disposed of to the satisfaction of the CITY. Prior to placing the asphalt concrete, these areas shall be tacked. Meet lines shall be straight and the edges vertical. The edges of meet line cuts shall be painted with liquid asphalt or emulsified asphalt prior to placing asphalt concrete. After placing the asphalt concrete, the meet line shall be sealed by painting with a liquid asphalt or emulsified asphalt and immediately covered with clean, dry sand.

3.11 CONSTRUCTION OF COURSES

A. The asphalt concrete pavement shall be constructed in one or more courses as shown on the Drawings.

1. Rolling shall continue until all roller marks are eliminated and compacted to 100 percent of the laboratory compacted mixture has been obtained.

3.12 SURFACE TOLERANCE

A. Tests for conformity with the specified grade shall be made by the CONTRACTOR immediately after initial compression. Any variation shall be immediately corrected by the removal or addition of materials and by continuous rolling.

B. The completed surface of the pavement shall be of uniform texture, smooth, uniform as to grade, and free from defects of all kinds. The completed surface shall not vary more than 1/8 inch from the lower edge of a 12-foot straightedge placed on the surface along the centerline or across the trench.

C. After completion of the final rolling, the smoothness and grade of the surface shall again be tested by the CONTRACTOR.

D. When deviations in excess of the above tolerances are found, the pavement surface shall be corrected as stated in Section 330-12.4 of the Standard Specifications.

E. All areas in which the surface of the completed pavement deviates more than twice the allowable tolerances described above shall be removed and replaced to the satisfaction of the CITY.

F. All costs involved in making the corrections of defects described above shall be borne by the CONTRACTOR and no compensation will be made for this work.

3.13 SAMPLES

A. If directed by the CITY, the CONTRACTOR shall without additional charge, provide the CITY with test results of samples of asphalt concrete cut from the completed pavement or the individual courses thereof for each occurrence. Provide a minimum of three test cores located as directed by the CITY. He shall also provide the CITY with test results of samples of the uncompressed asphalt concrete mixtures and all materials incorporated in the work.

3.14 WEATHER CONDITIONS

A. Asphalt shall not be applied to wet material. Asphalt shall not be applied during rainfall or any imminent storms that might adversely affect the construction. The CITY will determine when surfaces and materials are dry enough to proceed with construction. Asphalt concrete shall not be placed during heavy rainfall or when the surface upon which it is to be placed is wet.

3.15 PROTECTION OF STRUCTURES AND ADJUSTMENT OF APPURTENANCES

A. Provide whatever protective coverings may be necessary to protect the exposed portions of bridges, culverts, curbs, gutters, posts, guard fences, road signs, and any other structures from splashing oil and asphalt from the paving operations. Remove any oil, asphalt, dirt, or any other undesirable matter that may come upon these structures by reason of the paving operations.

B. Where water valve boxes, manholes, catch basins, or other underground utility appurtenances are within the area to be surfaced, the CONTRACTOR shall adjust the tops of these facilities to conform with the proposed surface elevations. The CONTRACTOR shall notify the proper authority and either raise or lower the appurtenances or make arrangements with that authority for having the facilities altered at the CONTRACTOR's expense before proceeding with the resurfacing. The CONTRACTOR will be responsible for making certain that appurtenances are brought to proper grade to conform with finished surface elevations and any delays experienced from such obstructions will be considered as incidental to the paving operation. No additional payment will be made. Protect all covers during asphalt application. All adjustments shall be made in accordance with the requirements of the respective utility.

3.16 EXCESS MATERIALS

A. Dispose of all excess materials. Make arrangements for the disposal and bear all costs or retain any profit incidental to such disposal.

3.17 CONTRACTOR'S RESPONSIBILITY

A. Settlement of replaced pavement over trenches within the warranty period shall be considered the result of improper or inadequate compaction of the subbase or base materials. The CONTRACTOR shall promptly repair all pavement deficiencies noted during the warranty period at the CONTRACTOR's sole expense.

3.18 SIDEWALKS AND CURBS

A. Replace concrete sidewalks and curbs to the same section width, depth, line, and grade as that removed or damaged or as shown on the Drawings. The minimum thickness of sidewalks shall be 4 inches and 6 inches in driveways. Cut ends of existing curb to a vertical plane. Prior to replacing the sections, properly backfill and compact the trench to prevent subsequent settlement.

B. Replace concrete sidewalks at scored joints and make replacement in a manner that will avoid a patched appearance. Provide a minimum 2-inch thick compacted leveling course of clean sand or gravel of quality hereinbefore specified. Finish concrete surface similar to the adjacent sidewalks.

3.19 DRIVEWAYS AND WALKS

A. Replace asphalt driveways and walks in accordance with Paragraph ASPHALT CONCRETE PAVEMENT REPLACEMENT.

B. Replace concrete and paver driveways in kind, using similar materials of construction. Concrete driveways shall consist of a reinforced, 6-inch section.

3.20 PAINTING TRAFFIC STRIPES

A. All areas having traffic stripes prior to paving shall be repainted. Temporary traffic painting shall be applied immediately after asphalt pavement has been placed. Permanent traffic painting may be applied only after the proper curing time for the asphalt. Painting traffic stripes (temporary and permanent) shall meet the requirements of Section 710 of the Standard Specifications.

3.21 INSTALLATION OF RAISED REFLECTIVE PAVEMENT MARKERS

A. All areas having raised reflective pavement markers prior to paving shall be replaced. Temporary pavement markers shall be applied immediately after asphalt pavement has been placed. Permanent pavement markers may be applied only after the proper curing time for the asphalt. Pavement markers and adhesive (temporary and permanent) shall meet the requirements of Section 706 of the Standard Specifications.

B. Spacing: As shown in the Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility operations on the State Highway System by the State of Florida, Department of Transportation, current edition.

3.22 PAVEMENT REPAIR

A. All damage to pavement as a result of work under this Contract shall be repaired in a manner satisfactory to the CITY and at no additional cost to the CITY. The repair shall include preparation of the subgrade, placing and compaction of the lime rock base and placement of the final asphalt surface as described in this Section.

B. The width of all repairs shall extend at least 12 inches beyond the limit of the damage with the edge of pavement left saw cut to a true edge with no irregularities. For county roads and city streets recently constructed or overlaid, the repair may be required to be full-lane width as shown on the Drawings.

3.23 SWALE RESTORATION

A. Swale areas (areas between pavement edge and sidewalks, or right-of-way line if there is no existing or proposed sidewalk) shall be graded and restored to the pre-existing condition. Where storm inlets are present, the swale shall have a consistent longitudinal slope towards the inlet.

B. Swale areas with previously existing improved surfaces, including but not limited to asphalt, concrete, pavers, crushed or decorative rock shall be restored in kind. Asphalt paved areas shall be constructed with a minimum 6- inch stabilized subbase and minimum 6-inch compacted limerock base, primed and topped with minimum 1-inch asphalt.

C. Swale areas with previously unimproved or turfed surfaces will be restored with soil stabilization where existing natural soil will not support vehicle loads normally imposed by movement and parking of heavy vehicles without rutting and shifting of soil. Subject to the approval of the CITY, this work may be performed in connection with preparation of subgrade or construction of the limerock base course.

D. Swale areas with previously unimproved or turfed surfaces will be topped with sod. St. Augustine “Floritam” and two inches of topsoil shall be used in irrigated areas and where St. Augustine sod was previously established. Bahia sod shall be placed in all other areas not previously improved or sodded.

3.24 SWALE STABALIZATION

A. Where swale stabilization is required as indicated above, stabilization shall be achieved by the addition and mixing in of suitable stabilizing materials. It shall be incorporated into the existing swale soils by plowing, disking, harrowing, blading or mixing with rotary tillers or other appropriate equipment approved by the CITY, until the mixed materials are of uniform bearing value throughout the width and at least 6-inch depth from the top of the swale after the swale is graded and shaped to the section indicated on the plans.

B. The swale areas shall be mixed and compacted to achieve a minimum average dry density of 90 percent throughout the 6-inch thickness, as determined by AASHTO T180. In the determination of such average, the minimum acceptable density shall be 85 percent and the maximum density which shall be used in

calculations shall be 100 percent (if the tested density is reported above 100 percent).

C. Density tests for swale stabilization shall be made at intervals not less than one set of three per City block on each side of the roadway, or at increased intervals as directed by the CITY when required to measure small or isolated sections (except where such testing may be considered unnecessary by the CITY). Each set of three shall be averaged as indicated above for determination of meeting the minimum requirements.

3.25 BRICK OR PAVER RESTORATION

A. Remove and salvage bricks or paver materials to be disturbed by the work. Payment will be made in accordance with the unit price for these items.

B. Restore pavers and apron area shall be constructed as shown in the Drawings. Payment will be made in accordance with the unit price for these items.

C. Paver and apron areas shall be constructed as shown in the Drawings.

D. If brick and paver materials are damaged, new materials shall match or all materials within the crossing must be replaced at no additional cost. New materials shall be approved by the CITY.

END OF SECTION

SECTION 02650
PREPARATORY CLEANING

PART 1 GENERAL

1.1 REQUIREMENTS

A. This section covers the preparatory cleaning of stormwater lines and drainage structures as needed prior to the internal survey of the stormwater lines by closed-circuit television. It also includes preparatory cleaning and root removal of stormwater lines and cleaning of drainage structures prior to rehabilitation. The CONTRACTOR shall furnish all necessary material, labor, equipment and services required for cleaning the specific stormwater lines.

1.2 GENERAL

A. Stormwater Line Cleaning: The intent of stormwater line cleaning is to remove foreign materials from the lines and restore the stormwater line to a minimum of 95% of the original carrying capacity or as required for proper installation of the cured-in-place pipe liner. Since the success of other phases of work depends a great deal on the cleanliness of the lines, the importance of this phase of the operation is emphasized. Stormwater Line Cleaning must be performed no more than 48 hours prior to lining the stormwater pipe. 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 where cleaning were attempted or continued. Should such conditions be encountered and approved by PROJECT MANAGER, the CONTRATOR will not be required to clean those specific stormwater line sections. If, in the course of normal cleaning operations, damage does result from pre-existing and unforeseen conditions, such as broken pipe, the CONTRACTOR will not be held responsible.

B. Drainage Structures Cleaning: All concrete and masonry surfaces must be cleaned prior to repair. Grease, loose bricks, mortar, unsound concrete, and other materials must be completely removed. Water blasting (minimum 1200 psi) utilizing proper nozzles shall be the primary method of cleaning; however, other methods such as acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. Surfaces on which the other methods are used shall be thoroughly rinsed, scrubbed and neutralized to remove cleaning agents and their reactant products.

1.3 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 stormwater line. 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 stormwater cleaning balls or other equipment which cannot be collapsed is used, special precautions to prevent flooding of the stormwater lines and public or private property shall be taken.

B. High Velocity Jet (Hydrocleaning) Equipment: All high velocity stormwater 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 designed 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

3.1 GENERAL

A. The designated manhole sections shall be cleaned using hydraulically propelled, high-velocity jet or mechanically powered equipment according to the recommended Specification for Sewer Collection System Rehabilitation reference in ASTM 1216-03. The equipment shall be capable of removing dirt, grease, rocks and sand, and other materials and obstructions from the stormwater lines and manhole and cleaning again attempted. Cleaning shall not occur until all root removal and treatment activities have been accomplished in accordance with Section 02660 ROOT REMOVAL.

3.2 CLEANING PRECAUTIONS

A. During all cleaning and preparation operations, all necessary precautions shall be taken to protect the stormwater line from damage. During these operations, precautions shall also be taken to insure that no damage or back up is caused to public or private property adjacent to or served by the stormwater line or its branches.

B. When possible, the flow of stormwater in the stormwater line 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. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant.

3.3 MATERIAL REMOVAL

A. All sludge, dirt, sand, rocks, great, 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, canals, waterways or other drainage structures.

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 stated herein. Any load of material or any portion thereof ,disposed of in a non-permitted fashion will result in a charge to the CONTRACTOR in the amount needed to rectify the infraction, which sum will be deducted by the CITY from any money due to the CONTRACTOR.

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 CONTRATOR shall immediately cleanup any such spill or waste. If the CONTRACTOR fails to cleanup such spill or waste immediately, the City shall have the right to cleanup or arrange for its cleanup and may charge to the CONTRACTOR all costs, including administrative cost and overhead, incurred by the City in connection with such cleanup. The City may also charge to the CONTRACTOR any costs incurred or penalties imposed on the City 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. Hazardous waste shall be regulated by Florida DEP & EPA guidelines.

F. The routes used by the CONTRACTOR for the conveyance of the waste material on a regular basis shall be subject to approval by the governing authority having jurisdiction over such routes.

3.4 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. Hazardous waste shall be regulated by Florida DEP & EPA guidelines.

B. Copies of records of all disposals shall be furnished to the CITY, 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 each work day, except in totally enclosed containers, approved by PROJECT MANAGER.

3.5 ACCEPTANCE OF CLEANING OPERATION

A. Acceptance of the stormwater line cleaning shall be made upon the successful completion of the television survey and shall be to the satisfaction of the CITY. If television survey shows the cleaning to be unsatisfactory, the CONTRACTOR shall be required to re-clean and re-inspect the pipe line until the cleaning is deemed satisfactory by PROJECT MANAGER.

B. For lines which have sags or dips to an extent that the television camera becomes submerged for three 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. Water removal through squeegee and / or sponges shall be performed until the television camera lens will no longer be submerged. This requirement may be waived by the PROJECT MANAGER 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 the service taps.

END OF SECTION

SECTION 02660
ROOT REMOVAL

PART 1 GENERAL

1.1 REQUIREMENTS

A. The work specified in this section includes all labor, materials, accessories, equipment and tools necessary for chemical root treatment, root removal and re-growth inhibition without damaging the trees, the environment, wildlife or any adjoining structure. All roots found in the stormwater line (mainline and service laterals) during CCTV inspections per Section 02136 TELEVISION SURVEY shall be chemically treated and removed prior to pipe lining. Chemical grouting shall be used to fill holes in the pipe of 1 inch diameter or larger that resulted from root penetration.

1.2 REFERENCES

A. Section 02650 – PREPARATORY CLEANING

B. Section 02136 – TELEVISION SURVEY

C. Section 02134 – CHEMICAL GROUTING

1.3 SUBMITTALS

A. The CONTRACOR shall submit the following in accordance with Section 01300 – SUBMITTALS:

1. A specimen product label showing the United States Environmental Protection Agency (EPA) registration.
2. A specimen product label indicating EPA approval of the products for stormwater lines.
3. The manufacturer's recommended guidelines for proper mixing ratios for maximum daily use of materials.
4. Material Safety Data Sheets (MSDS) for the product.

B. The above information data shall clearly indicate compliance with the specifications. The CONTRACTOR shall submit written exceptions to the specifications.

PART 2 PRODUCTS

2.1 GENERAL

A. Materials shall be EPA registered and labeled for ruse in stormwater lines and acceptable to the state and local government agencies having jurisdiction over its use.

2.2 CHEMICAL ROOT TREATMENT

A. The chemical root treatment material shall be of a type which has documented record of satisfactory performance in stormwater pipelines. The active ingredient of the chemical root treatment shall be Dichlorbenil. This active ingredient for killing roots shall be an aquatically approved, non-systemic herbicide (Dichlorbenil), which will kill roots at low concentrations, but will not permanently affect parts of the plant distance from the treated roots. The active ingredient must be detoxified by natural chemical / biochemical processes following its use.

B. The active ingredient for inhibiting root growth (Dichlorbenil) in stormwater lines shall inhibit root cell growth on contact, but shall not be transported so as to damage other portions of the trees. The material shall form a persistent chemical barrier suppressing the growth of root tips. The material shall be sufficiently stable under conditions of use to provide protection for twelve months.

C. To improve transportation of the active ingredients into root tissues, the root treatment material shall contain emulsifiers to degrease root masses and remove fatty acids from root tissue.

2.3 MECHANICAL ROOT REMOVAL

A. Roots shall be removed in the pipe segments to be rehabilitated by the installation of the cured-in-place liners. 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.

2.4 CHEMICAL GROUTING

A. The CONTRACTOR shall perform chemical grouting, if required, in accordance with Section 02134 – CHEMICAL GROUTING.

PART 3 EXECUTION

3.1 GENERAL

A. All materials and mixing application procedures for chemical root treatment shall conform to the latest industrial standards and requirements, and follow the recommendations of the manufacturer of the chemical root treatment material used.

B. After each segment of stormwater pipe has been inspected via the Preconstruction Survey, in accordance with Section 02136 TELEVISION SURVEY, all identified areas of root infestation shall be identified and approved by PROJECT MANAGER before any root treatment and removal activities are performed. Root treatment and removal shall consist of chemical treatment followed by mechanical removal. Mechanical root removal shall not occur any less than 45 calendar days after chemical treatment has been accomplished. Stormwater line cleaning in preparation of pipe lining

as specified in Section 02650 PREPARATORY CLEANING, shall occur only after all root treatment and removal activities have been completed.

C. Mechanical root removal shall be performed by the CONTRACTOR and shall capture and remove all root material flush with the interior pipe wall. Root penetrations through pipe joints, holes or through other means, shall be sealed with chemical grout where openings are 1 inch in diameter or larger or as required by CITY.

D. Root tips are the principal growth areas and are the surfaces most effectively penetrated by root treatment chemicals. When the root tips are damaged or removed by stormwater line cleaning, chemical treatment will be less effective. Consequently, no cleaning shall be performed in lines prior to chemical root treatment unless extensive grease, root masses, or debris preclude proper application of this material.

3.2 FLOW CONTROL

A. Stormwater service shall not be interrupted during root treatment. In situations where it is necessary, the CONTRACTOR shall block / bypass flow in accordance with Section 02410, FLOW BYPASS PUMPING SYSTEM.

3.3 PERSONAL PROTECTIVE EQUIPMENT

A. The CONTRACTOR shall use appropriate protective clothing and equipment as recommended by the manufacturer during the use and handling of the material.

3.4 MIXING PROCEDURES

A. All materials shall be delivered to the site in undamaged, unopened containers bearing the manufacturer's label. Mixing of the root treatment materials shall be done no more than 12 hours prior to use. The water used shall be clear and free of acid, alkali, oxidizing agents, oil, or other organic materials. Mixing water temperature shall be between 40 degrees F and 80 degrees F.

3.5 APPLICATION PROCEDURES

A. Where conditions permit, the volume of foam shall be sufficient to completely fill the air space above the flow, manhole to manhole. In all cases, the volume of foam delivered to the stormwater line shall be sufficient to attach to and penetrate all the root masses.

B. The foam shall be applied to sufficient pressure to penetrate a minimum of 5 feet into all laterals.

END OF SECTION

SECTION 02710
LIMEROCK BASE

PART 1 GENERAL

1.1 DEFINITIONS

A. Completed Course: Compacted, unyielding, free from irregularities, with smooth, tight, even surface, true to grade, line, and cross section.

B. Completed Lift: Compacted with uniform surface reasonably true to cross section.

PART 2 PRODUCTS

2.1 LIMEROCK BASE ROCK

A. The material used in Limerock base shall be material classified as Miami Oolite Formation.

B. The minimum of carbonates of calcium and magnesium in the Limerock shall be 70 percent. The maximum percentage of water-sensitive clay material shall be 3.

C. Limerock material shall be uniform in color and not contain cherty or other extremely hard pieces, or lumps, balls, or pockets of sand or clay size material in sufficient quantities as to be detrimental to the proper bonding, finishing, or strength of the Limerock base.

D. The Limerock base shall be uniformly graded from course to fine with 97 percent passing a 3-1/2-inch sieve, 80 percent passing a 2-inch sieve. 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.

E. Physical Qualities:

1. Liquid Limit, AASHTO T89: Maximum 35 percent.
2. Nonplastic.
3. Limerock material shall have an average Limerock bearing ratio (LBR) value of not less than 100.

2.2 SOURCE QUALITY CONTROL

A. CONTRACTOR: Perform tests necessary to locate acceptable source of materials meeting specified requirements.

B. Final approval of aggregate material will be based on materials' test results on installed materials.

C. Should separation of course from fine materials occur during processing or stockpiling, immediately change methods of handling materials to correct uniformity in grading.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

A. As specified in Section 02319 SUBGRADE PREPARATION.

B. Obtain PROJECT MANAGER's acceptance of subgrade before placement of Limerock base material.

C. Do not place base materials on soft, muddy subgrade.

3.2 EQUIPMENT

A. Use mechanical rock spreaders, equipped with a device that strikes off the rock uniformly to laying thickness, capable of producing even distribution. For areas where the use of a mechanical spreader is not practicable, the CONTRACTOR may spread the rock using bulldozers or blade graders.

3.3 HAULING AND SPREADING

A. Hauling Materials:

1. The Limerock shall be transported to the point where it is to be used and dumped on the end of the preceding spread.

2. Do not haul over surfacing in process of construction.

3. Loads: Of uniform capacity.

4. Maintain consistent gradation of material delivered; loads of widely varying gradations will be cause for rejection.

B. Spreading Materials:

1. Distribute material to provide required density, depth, grade and dimensions with allowance for subsequent lifts.

2. Produce even distribution of material upon roadway without segregation.

3. Should segregation of course from fine materials occur during placing, immediately change methods of handling materials to correct uniformity in grading.

3.4 CONSTRUCTION OF COURSES

A. General: Complete each lift in advance of laying succeeding lift to provide required results and adequate inspection.

B. Limerock Base:

1. Maximum Completed Lift Thickness: 6 inches or equal thickness.

2. Completed Course Total Thickness: As shown.

3. Spread lift on preceding course to required cross section.

4. Lightly blade and roll surface until thoroughly compacted.

5. Blade or broom surface to maintain true line, grade, and cross section.

C. Gravel Surfacing:

1. Maximum Completed Lift Thickness: 6 inches or equal thickness.

2. Completed Course Total Thickness: As shown.

3. Spread on preceding course in accordance with cross section shown.

4. Blade lightly and roll surface until material is thoroughly compacted.

3.5 ROLLING AND COMPACTION

A. Commence compaction of each layer of base after spreading operations and continue until density of 98 percent of maximum density has been achieved as determined by AASHTO T 180.

B. Roll each course of surfacing until material shall not creep under roller before succeeding course of surfacing material is applied.

C. Commence rolling at outer edges of surfacing and continue toward center; do not roll center of road first.

D. When the material does not have the proper moisture content to ensure the required density, wet or dry, as required. When adding water, uniformly mix it in by disking to the full depth of the course that is being compacted. During wetting or drying operations, manipulate as a unit, the entire width and depth of the course that is being compacted.

E. Place and compact each lift to require density before succeeding lift is placed.

F. Bind up preceding course before placing leveling course. Remove floating or loose stone from surface.

G. Blade or otherwise work surfacing as necessary to maintain grade and cross section at all times, and to keep surface smooth and thoroughly compacted.

H. Surface Defects: Remedy surface defects by loosening and rerolling. Reroll entire area, including surrounding surface, until thoroughly compacted.

1. Finished Surface: True to grade and crown before proceeding with surfacing.

3.6 SURFACE TOLERANCES

A. Finished Surface of Base Course and Leveling Course: Within plus or minus 0.04 foot of grade shown at any individual point.

B. Compacted Surface of Leveling Course: Within 0.04 foot from lower edge of 10 foot straightedge placed on finished surface, parallel to centerline.

C. Overall Average: Within plus or minus 0.01 foot from crown and grade specified.

3.7 DRIVEWAY RESURFACING

A. Replace gravel surfacing on driveways which were gravel surfaced prior to construction.

B. Provide compacted gravel surfacing to depth equal to original, but not less than 4 inches.

C. Leave each driveway in as good or better condition as it was before start of construction.

3.8 FIELD QUALITY CONTROL

A. In-Place Density Tests:

1. Construct base course so areas shall be ready for testing.

2. Allow reasonable length of time for CITY to perform tests and obtain results during normal working hours.

3.9 CLEANING

A. Remove excess material; clean stockpile areas of aggregate.

END OF SECTION

SECTION 02761
PAVEMENT MARKING

PART 1 GENERAL

1.1 STANDARD SPECIFICATIONS

A. When referenced in this section, shall mean Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, current edition.

1.2 DELIVER, STORAGE, AND PROTECTION

A. Packaging and Labeling: All coatings and traffic marking materials shall be shipped in strong containers plainly marked with the weight in pounds per gallon, the volume of coatings and traffic marking materials content in gallons, the color, user information, date of manufacture, LOT, batch and DOT code number. Each batch manufactured shall have a unique number. A true statement of the percentage composition of the pigment, the proportion of pigment to vehicle, and the name and address of the manufacturer, also shall be shown. The label shall warn the user of any special handling or precautions of the material, as recommended by the manufacturer. Any package not so marked will not be accepted for use under these Specifications.

B. Storage: Any coatings and traffic marking materials which, although inspected and approved at the point of manufacture, hardens or livers in the containers so that it cannot be readily broken up with a paddle to a smooth, uniform painting consistency, will be rejected. All materials shall have a container storage life of one year from date of manufacture. Any coatings and traffic marking materials not acceptable for proper application will be rejected, even though it conforms to these Specifications in all other respects.

C. Mixing: All paints except aluminum shall be delivered to the project completely mixed, and ready to be used without additional oil or thinner. Gasoline shall not be used for thinner under any circumstances.

PART 2 PRODUCTS

2.1 PAINT

A. Color: White, yellow, or blue traffic paint meeting the requirements of Section 971 of the Standard Specifications.

B. Homogeneous, easily stirred to smooth consistency, with no hard settlement or other objectionable characteristics during a storage period of 6 months.

2.2 THERMOPLASTIC STRIPING

A. White or yellow thermoplastic striping material meeting the requirements of Section 711 of the Standard Specifications.

2.3 RAISED REFLECTIVE MARKERS

A. Metallic or nonmetallic, or prismatic reflector type, of permanent colors retaining color and brightness under action of traffic.

B. Rounded surfaces presenting a smooth contour to traffic. The minimum area of each reflective face shall be 2-1/2 inches squared.

C. Marker and adhesive epoxy in accordance with ASTM D4280.

2.4 GLASS SPHERES

A. Glass spheres shall be of a composition designed to be highly resistant to traffic wear and to the effects of weathering.

B. In accordance with AASHTO M247, Type I with moisture resistant coating or a formulation specified by the traffic striping material manufacturer.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

A. Cleaning:

1. Thoroughly clean surfaces to be marked before application of pavement marking material.

2. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water or a combination of these methods.

3. Completely remove rubber deposits, surface laitance, existing paint markings, and other coatings adhering to pavement with scrapers, wire brushes, sandblasting, approved chemicals, or mechanical abrasion.

4. Scrub areas of old pavement affected with oil or grease with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application.

5. Surfaces shall be completely free of dry dirt and ice, and dry of water at the time of application of any of the materials specified herein.

6. Oil-Soaked Areas: After cleaning, seal with cut shellac to prevent bleeding through the new paint.

7. Reclean surfaces when Work has been stopped due to rain.

8. Existing Pavement Markings:
   a. Remove existing pavement markings that may interfere or conflict with newly applied marking patterns, or that may result in a misleading or confusing traffic pattern.
   b. Do not apply thermoplastic markings over existing preformed or thermoplastic markings.
   c. Perform grinding, scraping, sandblasting or other operations so finished pavement surface is not damaged.

B. Pretreatment for Early Painting: Where early painting is required on rigid pavements, pretreat with an aqueous solution containing 3 percent phosphoric acid and 2 percent zinc chloride.

C. New Concrete Pavement:

1. Allow a minimum cure time of 30 days before cleaning and marking.

2. Clean by either sandblasting or water blasting to the following results:
   a. No visible evidence of curing compound on peaks of textured concrete surface.
   b. No heavy puddled deposits of curing compound in valleys of textured concrete surface.
   c. Remaining curing compound is intact, with loose and flaking material completely removed.
   d. Peaks of textured pavement surface are rounded in profile and free of sharp edges and irregularities.

3. Allow a minimum drying time of 24 hours after water blasting before applying thermoplastic markings.

3.2 ALIGNMENT FOR MARKINGS

A. The CONTRACTOR shall be responsible for all measurements, reference points and marks, string lining, and any other steps required in establishing pavement marking locations and alignment. On tangents and on curves up to 1 degree, the alignment of the marking shall not deviate from the string line by more than 1 inch. On curves exceeding 1 degree, the maximum permissible deviation shall be 2

inches. All alignment width and location shall conform to the details shown on the Drawings.

3.3 PAINT APPLICATION

A. General:

1. Thoroughly mix pigment and vehicle together prior to application, and keep thoroughly agitated during application.

2. Do not add thinner.

3. Apply only when air and pavement temperatures are above 40 degrees F and less than 95 degrees F. Maintain paint temperature within these same limits.

4. Apply only when surface is dry.

5. Do not apply when conditions are windy to the point of causing overspray or fuzzy line edges.

6. New Asphalt Pavement: Allow a minimum pavement cure time as recommended by the manufacturer before applying paint.

7. Provide guide lines and templates to control paint application.

8. Take special precautions in marking numbers, letters, and symbols.

9. Sharply outline edges of markings and apply without running or spattering.

B. Rate of Application:

1. Reflective Markings:
   a. Paint: Apply evenly, 105 plus or minus 5 square feet per gallon.
   b. Glass Beads: Apply uniformly, 6 plus or minus 0.5 pounds of glass spheres per gallon of paint.

2. Nonreflective Markings: Apply paint evenly to pavement surface at a rate of 105 plus or minus 5 square feet per gallon.

3. On new pavement or new asphalt surface treatments, apply two coats of paint at a uniform rate of 210 square feet per gallon.

C. Drying:

1. Provide maximum drying time to prevent undue softening of bitumen and pickup, displacement, or discoloration by traffic.

2. If drying is abnormally slow, discontinue painting operations until cause is determined and corrected.

3.4 THERMOPLASTIC MARKING APPLICATION

A. Following specified surface preparation, prime and apply marking and glass beads to provide a reflectorized strip as shown on Drawings.

B. The material shall be applied to the pavement by the extrusion method only, wherein one side of extrusion shaping die is the pavement and the other sides are formed by suitable equipment for heating and controlling the flow of the material.

C. Application Temperatures:

1. Pavement Surface: Minimum 40 degrees F and rising.

2. Thermoplastic: Minimum 375 degrees F, maximum 425 degrees F.

D. Primer:

1. On portland cement concrete and existing asphalt pavements, apply epoxy resin primer/sealer according to the thermoplastic manufacturer's recommendations.

2. All primer/sealer to dry prior to applying thermoplastic.

E. Thermoplastic Marking:

1. Extrude in a molten state, free of dirt or tint. at a minimum thickness of 0.90 inch for lane lines and 0.125 inch; maximum thickness of 0.190 inch.

2. Apply centerline, skipline, edgeline, and other longitudinal type markings with a mobile applicator.

3. Apply special markings, crosswalks, stop bars, legends, arrows, and similar patterns with a portable, extrusion-type applicator.

F. Glass Bead Application:

1. Immediately after marker application, mechanically apply such that the beads are held by and imbedded in the surface of the molten material.

2. Application Rate: One pound per 20 square feet of compound.

G. Cool completed marking to ambient temperature prior to allowing vehicular traffic.

3.5 INSTALLATION OF RAISED REFLECTIVE MARKERS

A. Apply markers to the bonding surface using bituminous adhesives only.

B. Apply the adhesive to the binding surface (not the marker) so that 100 percent of the bonding area of the marker will be covered.

C. Align markers carefully, projecting no more than 3/4-inch above level of pavement. Reflective face of the marker shall be perpendicular to a line parallel to the roadway centerline. Do not install markers over longitudinal or transverse joints of the bonding surface.

D. Spacing: As shown on the Drawings.

E. Immediately remove excess adhesive from the bonding surface and exposed surface of the marker.

F. Use only a mineral spirits meeting Federal Specifications TT-T-291 to remove adhesive from exposed faces of markers.

3.6 GLASS BEAD APPLICATION

A. Apply immediately following application of paint.

B. Use evenly distributed, drop-on application method.

C. Rate: 10 pounds per gallon of paint.

3.7 PROTECTION

A. The CONTRACTOR shall erect adequate warning signs and/or provide sufficient number of flagmen, and take all necessary precautions for the protection of the materials and safety of the public.

B. Protect surfaces from disfiguration by paint spatters, splashes, spills, or drips.

3.8 CLEANUP

A. Remove paint spatters, splashes, spills, or drips from Work and staging areas and areas outside of the immediate Work area where spills occur.

END OF SECTION

SECTION 02771
CONCRETE CURBS AND SIDEWALKS

PART 1 GENERAL (NOT USED)

PART 2 PRODUCTS

2.1 EXPANSION JOINT FILLER

A. 1/2-inch thick, preformed asphalt-impregnated, expansion joint material meeting AASHTO M153 Type I, II, or III, or AASHTO M213, or cellulose fiber types meeting the requirements of AASHTO M213, except the asphalt content is acceptable provided they contain minimum of 0.2 percent copper pentachlorophenate as a preservative and 1 percent water proofing wax.

2.2 CONCRETE

A. Ready-mixed meeting ASTM C94, Option A, with compressive strength of 3,000 psi at 28 days.

B. Maximum Aggregate Size: 1-1/2 inch.

C. Slump: 2 to 4 inches.

2.3 CURING COMPOUND

A. Liquid membrane-forming, clear or translucent, suitable for spray application and meeting ASTM C309, Type 1.

PART 3 EXECUTION

3.1 FORMWORK

A. Lumber Materials:

1. 2-inch dressed dimension lumber, or metal of equal strength, straight, free from defects that would impair appearance or structural quality of completed curb and sidewalk.
2. 1-inch dressed lumber or plywood may be used where short-radius forms are required.

B. Metals: Steel in new undamaged condition.

C. Setting Forms:

1. Construct forms to shape, lines, grades, and dimensions.
2. Stake securely in place.

D. Bracing:

1. Brace forms to prevent change of shape or movement resulting from placement.
2. Construct short-radius curved forms to exact radius.

E. Tolerances:

1. Do not vary tops of forms from gradeline more than 1/8 inch when checked with 10-foot straightedge.
2. Do not vary alignment of straight sections more than 1/8 inch in 10 feet.

3.2 PLACING CONCRETE

A. Excavate to the required depth, place and compact limerock base rock as specified in Section 02710, LIMEROCK BASE. Compact directly under the area and 1 foot beyond each side of the sidewalk and curb.

B. Prior to placing concrete, remove water from excavation and debris and foreign material from forms.

C. Place concrete as soon as possible, and within 1-1/2 hours after adding cement to mix without segregation or loss of ingredients, and without splashing.

D. Place, process, finish, and cure concrete in accordance with applicable requirements of ACI 304, and this section. Wherever requirements differ, the more stringent shall govern.

E. To compact, vibrate until concrete becomes uniformly plastic.

F. All edges shall be smooth and rounded.

3.3 CURB CONSTRUCTION

A. Construct ramps at pedestrian crossings.

B. Expansion Joints: Place at maximum 20-foot intervals and at the beginning and end of curved portions of curb, and at connections to existing curbs. Install expansion joint filler at each joint.

C. Curb Facing: Do not allow horizontal joints within 7 inches from top of curb.

D. Contraction Joints:

1. Maximum 10-foot intervals in curb.
2. Provide open joint type by inserting thin, oiled steel sheet vertically in fresh concrete to force coarse aggregate away from joint.
3. Insert steel sheet to full depth of curb.
4. Remove steel sheet with sawing motion after initial set has occurred in concrete and prior to removing front curb form.
5. Finish top of curb with steel trowel and finish edges with steel edging tool.

E. Front Face:

1. Remove front form and finish exposed surfaces when concrete has set sufficiently to support its own weight.

2. Finish formed face by rubbing with burlap sack or similar device to produce uniformly textured surface, free of form marks, honeycomb, and other defects.
3. Remove and replace *defective* concrete.
4. Apply curing compound to exposed surfaces of curb upon completion of finishing.
5. Continue curing for minimum of 5 days.

F. Backfill curb with earth upon completion of curing period, but not before 7 days has elapsed since placing concrete.

1. Backfill shall be free from rocks 2 inches and larger and other foreign material.
2. Compact backfill firmly.

3.4 SIDEWALK CONSTRUCTION

A. Thickness:

1. 4 inches in walk areas as approved by CITY
2. 6 inches in driveway and commercial areas

B. Connection to Existing Sidewalk:

1. Remove old concrete back to an existing contraction joint.
2. Clean the surface.
3. Apply a neat cement paste immediately prior to placing new sidewalk.

C. Expansion Joints: Place at maximum 20-foot intervals, at adjacent curb expansion joint, where sidewalk ends at curb, and around posts, poles, or other objects penetrating sidewalk. Install expansion joint filler at each joint.

D. Contraction Joints:

1. Provide transversely to walks at locations opposite contraction joints in curb.
2. Dimensions: 3/16-inch by 1-inch weakened plane joints.
3. Construct straight and at right angles to surface of walk.

E. Finish:

1. Broom surface with fine-hair broom at right angles to length of walk and tool at edges, joints, and markings.
2. Ensure that the surface variations are not more than ¼ inch under a 10-foot straightedge, or more than 1/8 inch on a 5-foot transverse section.
3. Mark walks transversely at 5-foot intervals, or in pattern shown on Drawings, with jointing tool; finish edges with rounded steel edging tool.
4. Apply curing compound to exposed surfaces upon completion of finishing.
5. Protect sidewalk from damage and allow to cure for at least 7 days.

END OF SECTION

SECTION 02772
ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.1 STANDARD SPECIFICATIONS

A. When referenced in this Section shall mean Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, current edition.

1.2 QUALITY ASSURANCE

A. Qualifications

1. Independent Testing Laboratory: In accordance with ASTM E329.
2. Asphalt concrete mix formula shall be prepared by an approved certified independent laboratory under the supervision of a certified asphalt technician.

1.3 ENVIRONMENTAL REQUIREMENTS

A. Temperature: Do not apply asphalt materials or place asphalt mixes when ground temperature is lower than 10 degrees C (50 degrees F), or air temperature is lower than 4 degrees C (40 degrees F). Measure ground and air temperature in shaded areas away from heat sources or wet surfaces.

B. Moisture: Do not apply asphalt materials or place asphalt mixes when application surface is wet.

PART 2 PRODUCTS

2.1 MATERIALS

A. Prime Coat: Cut-back asphalt, Grades RC-70 or RC-250 meeting the requirements of Section 916-2 of the Standard Specifications.

B. Tack Coat: Emulsified asphalt, Grade RS-2, SS-1, or SS-1H meeting the requirements of Section 916-4 of the Standard Specifications. The bituminous material shall be heated to a suitable consistency as directed by the PROJECT MANAGER.

C. Sand (Blotter Material): Clean, dry, with 100 percent passing a 4.75 mm (No. 4) sieve, and a maximum of 10 percent passing a 75 mm (No. 200) sieve.

2.2 ASPHALT CONCRETE MIX

A. General:

1. Mix formula shall not be modified except with the written approval of PROJECT MANAGER.

2. Source Changes:

a. Should material source(s) change, establish a new asphalt concrete mix formula before the new material(s) is used.

b. Perform check tests of properties of the plant-mix bituminous materials on the first day of production and as requested by PROJECT MANAGER to confirm that properties are in compliance with design criteria.

c. Make adjustments in gradation or asphalt content as necessary to meet design criteria.

B. Asphalt Concrete Type S-III or SP-9.5 (course) meeting the requirements in Section 334 of the Standard Specifications.

1. Mineral Filler shall meet the requirements of Section 917 of the Standard Specifications.

C. Composition: Hot-Plant mix of aggregate, mineral filler, and paving grade asphalt cement. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading requirements of the mix formula.

D. Aggregate:

1. The aggregate shall meet the requirements in Section 334 of the Standard Specifications.

2. Mineral Filler shall meet the requirements of the Section 917 of the Standard Specifications.

E. Asphalt Cement: Paving Grade AC-30 meeting the requirements of Section 916 of the Standard Specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.

1. Mill to a depth of 2 inches (50 mm)

3.3 PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches

(300 mm) into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseat concrete pieces firmly.

1. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.

C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

D. Patching: Fill excavated pavements with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

3.4 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.5 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at minimum temperature of 250 deg F (121 deg C).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.6 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).
3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

3.7 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory- plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has

cooled and hardened.

G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.8 ASPHALT CURBS

A. Construct hot-mix asphalt curbs over compacted pavement surfaces. Apply a light tack coat unless pavement surface is still tacky and free from dust. Spread mix at minimum temperature of 250 deg F (121 deg C).

1. Asphalt Mix: Same as pavement surface-course mix.

B. Place hot-mix asphalt to curb cross section indicated or, if not indicated, to local standard shapes, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms after hot-mix asphalt has cooled.

3.9 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch (13 mm).
2. Surface Course: Plus 1/4 inch (6 mm), no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:

1. Base Course: [1/4 inch (6 mm)]
2. Surface Course: [1/8 inch (3 mm)] .
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch (6 mm).

3.10 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age for **30** days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

1. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 lb/gal. (0.72 kg/L).

3.11 WHEEL STOPS

A. Install wheel stops in bed of adhesive as recommended by manufacturer.

B. Securely attach wheel stops to pavement with not less than two galvanized-steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: CITY will engage a qualified testing agency to perform tests and inspections.

B. Replace and compact hot-mix asphalt where core tests were taken.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.13 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION

SECTION 02911
SOIL PREPARATION

PART 1 GENERAL

1.1 SEQUENCING AND SCHEDULING

A. Rough grade areas to be planted or seeded prior to performing Work specified under this Section.

PART 2 PRODUCTS

2.1 TOPSOIL

A. General: Uniform mixture of 50 percent sand and 50 percent muck in a loose friable condition, free from objects larger than 1-1/2 inches maximum dimension, and free of subsoil, roots, grass, other foreign matter, hazardous or toxic substances, and deleterious material that may be harmful to plant growth or may hinder grading, planting, or maintenance.

B. Textural Amendments: Amend as necessary to conform to required composition.

C. Source: Import topsoil if onsite material fails to meet specified requirements or is insufficient in quantity.

2.2 SOURCE QUALITY CONTROL

A. Topsoil Analysis/Testing: Performed by county or state soil testing service or approved certified independent testing laboratory.

B. Should soil tests prove the topsoil to be alkaline or above the accepted minimum for salt content, the topsoil shall be removed and replaced by acceptable material at the CONTRACTOR's expense.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

A. The subgrade shall be four (4) inches lower than finished grade with two (2) inches of topsoil added to sod areas.

B. Scarify subgrade to minimum depth of six (6) inches where topsoil is to be placed.

C. Remove stones over 2-1/2 inches in any dimension, sticks, roots, rubbish, and other extraneous material.

D. Limit preparation to areas which will receive topsoil within two (2) days after preparation.

3.2 TOPSOIL PLACEMENT

A. Topsoil Thickness:

1. Sodded Areas: 2-3 inches.
2. Planting Beds: 6 inches.

B. Do not place topsoil when subsoil or topsoil is excessively wet or otherwise detrimental to the Work.

C. Mix soil amendments with topsoil before placement or spread on topsoil surface and mix thoroughly into entire depth of topsoil before planting or seeding.

D. Uniformly distribute to within 1/2-inch of final grades. Fine grade topsoil eliminating rough or low areas and maintaining levels, profiles, and contours of subgrade.

E. Remove stones exceeding 1-1/2 inches in any dimension, roots, sticks, debris, and foreign matter during and after topsoil placement.

F. Remove surplus subsoil and topsoil from site. Grade stockpile area as necessary and place in condition acceptable for planting or seeding.

END OF SECTION

SECTION 02920
SODDING

PART 1 GENERAL

1.1 DEFINITIONS

A. Maintenance Period: Begin maintenance immediately after each area is planted (sod) and continue for a period of eight (8) weeks after all planting under this Section is completed.

B. Satisfactory Stand: Grass or section of grass that has:

1. No bare spots larger than thirty-six (36) square inches.
2. Not more than five (5) percent of total area with bare spots larger than eighteen (18) square inches.

1.2 DELIVERY, STORAGE, AND PROTECTION

A. Sod:

1. Do not harvest if sod is excessively dry or wet to the extent survival may be adversely affected.
2. Harvest and deliver sod only after laying bed is prepared for sodding.
3. Roll or stack to prevent yellowing.
4. Deliver and lay within twenty-four (24) hours of harvesting.
5. Keep moist and covered to protect from drying from time of harvesting until laid.

1.3 WEATHER RESTRICTIONS

A. Perform Work under favorable weather and soil moisture conditions as determined by accepted local practice.

1.4 SEQUENCING AND SCHEDULING

A. Prepare topsoil as specified in Section 02911 SOIL PREPARATION, before starting Work of this Section.

B. Complete Work under this Section within five (5) days following completion of soil preparation.

C. Notify PROJECT MANAGER at least three (3) days in advance of:

1. Each material delivery.
2. Start of planting activity.

D. Planting Season: Those times of year that are normal for such Work as determined by accepted local practice.

1.5 MAINTENANCE SERVICE

A. CONTRACTOR: Perform maintenance operations during maintenance period to include:

1. Watering: Keep surface moist.
2. Washouts: Repair by filling with topsoil, and replace sodded areas.
3. Mowing: Mow to two (2) inches after grass height reaches three (3) inches, and mow to maintain grass height from exceeding 3 1/2 inches.
4. Resod unsatisfactory areas or portions thereof immediately at the end of the maintenance period if a satisfactory stand has not been produced.
5. Resod during next planting season if scheduled end of maintenance period falls after September 15, if a satisfactory stand has not been produced.
6. Resod entire area if satisfactory stand does not develop by July 1 of the following year.

PART 2 PRODUCTS

2.1 FERTILIZER

A. Commercial, uniform in composition, free-flowing, suitable for application with equipment designed for that purpose; minimum percentage of plant food by weight.

B. Mix:

1. Nitrogen: Sixteen**.**
2. Phosphoric Acid: Four.
3. Potash: Eight.

2.2 SOD

A. Unless a particular type of sod is called for, sod may be of either Bahia grass, or Bermuda grass at the CONTRACTOR's option.

B. Strongly rooted pads, capable of supporting own weight and retaining size and shape when suspended vertically from a firm grasp on upper 10 percent of pad.

1. Grass Height: Normal.
2. Strip Size: Supplier's standard, commercial size rectangles.
3. Soil Thickness: Uniform; 1-inch plus or minus 1/4-inch at time of cutting.
4. Age: Not less than ten (10) months or more than thirty (30) months.

5. Condition: Healthy, green, moist; free of diseases, nematodes and insects, and of undesirable grassy and broadleaf weeds. Yellow sod, or broken pads, or torn or uneven ends will not be accepted
6. Any netting contained within the sod shall be certified by the manufacturer to be bio-degradable within a period of three (3) months from installation.

PART 3 EXECUTION

3.1 PREPARATION

A. Grade Areas to Smooth, Even Surface with Loose, Uniformly Fine Texture:

1. Roll and rake, remove ridges, fill depressions to meet finish grades.
2. Limit such Work to areas to be planted within immediate future.
3. Remove debris, and stones larger than 1 1/2 inches diameter, and other objects that may interfere with planting and maintenance operations.

B. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding. Do not create muddy soil.

C. Restore prepared areas to specified condition if eroded or otherwise disturbed after preparation and before planting.

D. Limit preparation to those areas that can be sodded within 72 hours after preparation.

3.2 FERTILIZER

A. Apply evenly over area in accordance with manufacturer's instructions. Mix into top two (2) inches of top soil.

B. Application Rate: 20 pounds per 1,000 square feet (1,000 pounds per acre).

3.3 SODDING

A. Do not plant dormant sod, or when soil conditions are unsuitable for proper results.

B. Pre-wet the area prior to placing sod. Lay sod to form solid mass with tightly fitted joints; butt ends and sides, do not overlap:

1. Stagger strips to offset joints in adjacent courses.
2. Work from boards to avoid damage to subgrade or sod.
3. Tamp or roll lightly to ensure contact with subgrade; work sifted soil into minor cracks between pieces of sod, remove excess to avoid smothering adjacent grass.
4. Complete sod surface true to finished grade, even, and firm.

C. Fasten sod on slopes to prevent slippage with wooden pins six (6) inches long driven through sod into subgrade, until flush with top of sod. Install at sufficiently close intervals to securely hold sod.

D. Water sod with fine spray immediately after planting. During first month, water daily or as required to maintain moist soil to depth of four (4) inches.

3.4 FIELD QUALITY CONTROL

A. Eight (8) weeks after sodding is complete and on written notice from CONTRACTOR, PROJECT MANAGER will, within fifteen (15) days of receipt, determine if the sod has been satisfactorily established.

B. If the sod is not satisfactorily established, CONTRACTOR shall replace the sod and repeat the requirements of this Section.

END OF SECTION

SECTION 02930
TREES, PLANTS, AND GROUND COVERS

PART 1 GENERAL

1.1 DEFINITIONS

A. Measurement:

1. In size grading Balled and Burlapped (B & B), caliper takes precedence over height.

2. Take trunk caliper 6 inches above the ground level (up to and including 4-inch caliper size) and 12 inches above the ground level for larger trees.

3. Measure size of container-grown stock by height and width of plant.

4. Measure herbaceous perennials pot size, not top growth.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Cover plants during shipment with a tarpaulin or other suitable covering to minimize drying.

B. Balled and Burlapped Plants: Wrap each ball firmly with burlap and securely bind with twine, cord, or wire for shipment and handling. Drum-lace balls with a diameter of 30 inches or more.

C. As specified herein for transplanting.

1.3 MAINTENANCE

A. Commence to maintain plant life immediately after planting and maintain for a minimum of one growing season, and until plants are well established and exhibit a vigorous growing condition.

B. In accordance with Accepted Submittal on Care and Maintenance of Plants and as follows:

1. Maintain by watering, pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers.

2. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required.

3. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.

4. Remove guys, stakes, and other supports at end of maintenance service.

5. Maintenance includes temporary protection fences, barriers, and signs as required for protection.

6. Coordinate watering to provide deep root watering to newly installed trees.

1.4 SCHEDULING AND SEQUENCING

A. Plant Deliveries: Notify PROJECT MANAGER at least 3 days in advance of each delivery.

B. Planting Season: Conduct planting during times of year that are normal for such work as determined by accepted local practice.

C. Plant trees and shrubs after final grades are established and before planting of lawns or grasses.

PART 2 PRODUCTS

2.1 PLANT MATERIALS

A. Provide quantity, size, genus, species, and variety of trees and shrubs indicated; comply with applicable requirements of ANSI Z60.1.

B. Nomenclature (Names of Plants): In accordance with “Hortus Third”.

C. Quality and Size:

1. Nursery-grown, habit of growth normal for species.

2. Sound, healthy, vigorous, and free from insects, diseases, and injuries.

3. Equal to or exceeding measurements specified in plant list. Measure plants before pruning with branches in normal position.

4. Root System of Container-Grown Plants: Well developed and well distributed throughout the container, such that the roots visibly extend to the inside face of the growing container.

5. Perform necessary pruning at time of planting.

6. Sizes: Dimensional relationship requirements of ANSI Z60.1 for kind and type of plants required.

7. Balled and Burlapped Plants: Firm, intact ball of earth encompassing enough of the fibrous and feeding root system to enable full plant recovery.

   a. Ball Size: ANSI Z60.1.

8. Container-Grown Plants: Self-established root systems, sufficient to hold earth together after removal from container, without being rootbound.

a. Stock: Grown in delivery containers for at least 6 months, but not over 2 years.

9. Label each tree and shrub of each variety with securely attached waterproof tag, bearing legible designation of botanical and common name.

10. All trees must have a fully developed fibrous root system, be heavily branched, or in palms, heavily leafed, free from all insects, fungus, and other diseases.

11. Palms: Wrap the roots of all plants of the palm species before transporting, except if they are container grown plants and ensure that they have an adequate root ball structure, and mass for healthy transplantation as defined in “Florida Grades and Standards for Nursery Plants.”

12. The CITY will not require burlapping, if the palm is carefully dug from marl or heavy soil that adheres to the roots and retains its shape without crumbling. During transporting and after arrival, carefully protect root balls of palms from wind and exposure to the sun. Muck grown palms are not allowed. After delivery to the job site, if not planting the palm within 24 hours, cover the root ball with a moist material. Plant all palms within 48 hours of delivery to the site.

13. Move sabal and coconut palms in accordance with the “Florida Grades and Standards for Nursery Plants.”

D. Replacement Shrubs and Trees: Same species, size, and quality as specified for plant being replaced, except existing trees larger than 4-inch caliper, may be replaced with 4-inch caliper trees.

2.2 ANTI-DESICCANT

A. Provide transpiration retarding material to be used where any plant material is moved during the growing season.

2.3 GUYING, STAKING, AND WRAPPING MATERIALS

A. Wood Stake: 2 inches by 2 inches by 8 feet.

B. Guy Wires: Galvanized, 12-gauge, ductile steel.

C. Flags:

1. Wood: 1/2-inch by 3 inches by 12 inches, with 3/8-inch hole centered 1-1/2 inches from each end, painted white.

2. Sheet Metal: 1-1/2-inch with clipped corners and both ends punched painted white.

D. Hose: Two-ply, reinforced rubber garden hose, not less than 1/2-inch diameter, new or used.

E. Wrapping Material:

1. Burlap: Of first quality, minimum 8 ounces in weight, not less than 6 inches nor more than 10 inches in width.

2.4 MULCH

A. Free from noxious weed seed and foreign material harmful to plant growth.

B. Barkdust: Medium grind, pine; maximum 3/4-inch particle size.

2.5 PLANTING SOIL MIX

A. Proportion by Weight: 3/4 approved top soil with 1/4 approved organic matter.

PART 3 EXECUTION

3.1 TRANSPLANTING

A. Remove existing plantings identified for transplant prior to beginning Work in area in accordance with standard nursery practices and as specified herein.

B. Non-dormant Plants: Prior to digging, spray foliage with anti-desiccant, as recommended by manufacturer.

C. Cover balls and containers of plants that cannot be planted immediately, with moist soil or mulch.

D. Water plants as often as necessary to prevent drying until planted.

E. Do not remove container-grown stock from containers before time of planting.

F. Bare-Root Plants:

1. Dig up with least possible injury to fibrous root system.

2. Immediately upon removal from ground, cover roots with thick coating of mud or wrap in wet straw, moss, or other suitable packing material for protection from drying until planted.

3. Plant or heel-in immediately upon relocation to temporary storage. Open and separate bundles of bare-root plants, and eliminate air pockets among roots as they are covered.

G. Replant each temporarily removed tree, shrub, or other plant only after construction activities are completed and applicable grading and topsoil replacement is completed in its vicinity. Replant trees, shrubs, and other plants in their original positions unless otherwise shown or approved. Plant as specified for new plants.

H. Maintain transplanted materials in same manner as new trees and shrubs.

3.2 LOCATION OF PLANTS

A. Locate new planting or stake positions as shown unless obstructions are encountered, in which case notify PROJECT MANAGER.

B. Locate no planting, except ground cover, closer than 18 inches to pavements, pedestrian pathways, and structures.

C. Request PROJECT MANAGER observes locations, and adjusts as necessary before planting begins.

3.3 PREPARATION

A. Subsoil Drainage: Furnish for plant pits and beds.

B. Planting Soil: Delay mixing of amendments and fertilizer if planting will not follow preparation of planting soil within 2 days. For pit and trench type backfill, mix planting soil prior to backfilling and stockpile at site.

C. Plants: Place on undisturbed existing soil or well-compacted backfill.

D. Trees and Shrubs:

1. Pits, Beds, and Trenches: Excavate with vertical and scarified sides.

2. B & B Trees and Shrubs: Make excavations at least twice as wide as root ball.

3. Container-Grown Stock: Excavate as specified for B & B stock, adjust for size of container width and depth.

4. Bare-Root Trees: Excavate pits to a width to just accommodate roots fully extended and depth to allow uppermost roots to be below original grade.

5. Fill excavations with water and allow to percolate out prior to planting.

E. Ground Cover Beds:

1. Mix amendments and fertilizer with top soil prior to placing or apply on surface of top soil and mix thoroughly before planting.

2. Scarify top soil to a depth of 4 to 6 inches.

3. Establish finish grading of soil. Rake areas to smooth and create uniform texture and fill depressions.

4. Moisten.

3.4 PLANTING

A. Plant trees before planting surrounding smaller shrubs and ground covers. Adjust plants with most desirable side facing toward the prominent view (sidewalk, building, street).

B. B & B Plants: Place in pit by lifting and carrying by its ball (do not lift by branches or trunk). Lower into pit. Set straight and in pit center with tip of rootball 1 to 2 inches above adjacent finish grade.

C. Bare-Root Plants: Spread roots and set stock on cushion of planting soil mixture. Set straight in the pit center so that roots, when fully extended, will not touch walls of the planting pit and the uppermost root is just below finish grade. Cover roots of bare-root plants to the crown.

D. Container-Grown Plants: Remove containers, slash edges of rootballs from top to bottom at least 1-inch deep. Plant as for B & B plants.

E. Ground Covers: Dig planting holes through mulch with one of the following: hand trowel, shovel, bulb planter, or hoe. Split biodegradable pots or remove non-biodegradable pots. Root systems of all potted plants shall be split or crumbled. Plant so roots are surrounded by soil below the mulch. Set potted plants so pot top is even with existing grade.

3.5 BACKFILLING

A. Backfill with planting soil, except where existing soil is suitable according to top soil analysis.

B. B & B Plants:

1. Partially backfill pit to support plant. Remove burlap and binding from sides and tops of B & B plants, do not pull burlap from under balls.

2. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill to eliminate air pockets even if it is raining. Finish backfilling pit sides.

3. Never cover top of rootball with soil. Form a saucer above existing grade, completely around the outer rim of the plant pit.

C. Bare-Root Plants:

1. Plumb before backfilling and maintain plumb while working backfill around roots and placing layers above roots.

2. Set original soil line of plant 1-inch to 2 inches above adjacent finish landscape grades. Spread out roots without tangling or turning up to surface. Cut injured roots cleanly; do not break.

3. Carefully work backfill around roots by hand; puddle with water until backfill layers are completely saturated.

3.6 GUYING AND STAKING

A. Support trees immediately after planting to maintain plumb position.

B. Guying: Support all trees over 4 inches in caliper with 3 guys equally.

C. Special Requirements for Palm Trees: Brace palms which are to be staked with three 2-inch by 4-inch wood braces, toe-nailed to cleats which are securely banded at two points to the palm, at a point one third the height of the trunk. Pad the trunk with five layers of burlap under the cleats. Place braces approximately 120 degrees apart and secure them underground by 2- by 4- by 12-inch stake pads.

3.7 MULCHING

A. Cover planting beds and area of saucer around each plant with 3-inch thick layer of mulch within 2 days after planting. Saturate planting area with water.

3.8 PRUNING AND REPAIR

A. Prune only after planting and in accordance with standard horticultural practice to preserve natural character of the plant. Perform in presence of CITY representative. Remove all dead wood, suckers, and broken or badly bruised branches. Use only clean, sharp tools. Do not cut lead shoot.

B. For Existing Trees Impacted by Construction Activities:

1. Maintain a minimum 6-foot clearance from all trees except palm trees.

2. Where roots of trees are encountered in the excavation area, use a 24-inch deep saw cut prior to excavation. Roots shall not be torn by excavating equipment. Cut roots do not require coating.

3. Overhead branches not trimmed prior to construction and interfering with construction activities will be pruned and cut as approved by the City Forester and not torn or broken off with excavating equipment.

3.9 WEED CONTROL

A. Maintain a weed-free condition within planting areas. Apply pre-emergent selective herbicide to mulched beds at manufacturer's recommended rate of application.

3.10 PROTECTION OF INSTALLED WORK

A. Protect planting areas and plants against damage for duration of maintenance period.

END OF SECTION

SECTION 02958
STRUCTURAL LINING
FOR DRAINAGE STRUCTURES

PART 1 GENERAL

1.1 DESCRIPTION

A. Section includes Work required for the various type of drainage structures (catch basins, inlets, manholes) linings identified in the repair schedule contained in the plans. The materials and methods included in this section are designed to eliminate infiltration through drainage structure walls and enhance structural integrity of severely deteriorated drainage structures. Materials of linings are spray applied polymeric (epoxy and polyurethane) resins.

1.2 SUBMITTALS

A. CONTRACTOR shall submit manufacturer's technical literature on material and description of installation method including, but not limited to:

1. Requirements for application, such as temperature and humidity.
2. Requirements for worker safety, such as ventilation and safe handling procedures.
3. Maximum storage life
4. Mixing and proportioning requirements for specific application
5. Pot life
6. Curing time
7. Physical properties
8. Test results on resistance to abrasive chemicals.

1.3 QUALITY ASSURANCE

A. Product application shall be performed only by workmen trained and experienced with specified and trained in confined space entry.

1. Certification: Applicators for spray-applied coating installation shall be certified by the manufacturer.
2. CONTRACTOR Experience: Minimum of five (5) years of experience with similar applications of the materials specified.

PART 2 PRODUCTS

2.1 SPRAY APPLIED RESINS

A. The spray-applied coating shall be resistant to chemicals typically found in stormwater lines.

B. The spray-applied coating shall also be resistant to damage due to impact and abrasion.

C. They spray-applied liner shall conform to the minimum physical requirements listed below.

Compressive strength, ASTM D695	10,500 psi
Flexural modulus (initial), ASTM D790	73,500
Flexural strength, ASTM D790	12,000 psi
Bond strength, ASTM D4541	Must exceed substrate tensile strength
Tensile strength, ASTM D638	7,000 psi
Chemical Resistance (ASTM D543) – Exposure to sodium hypochlorite (10 percent) and sulfuric acid (15 percent) for 168 hours	No degradation in physical or mechanical properties.

PART 3 EXECUTION

3.1. GENERAL

A. All pipes in service shall be plugged or bypassed in accordance with Section 02410 before any work is started on the structure. No debris shall be flushed down the line.

B. Only personnel who are aptly trained in confined space entry shall be permitted to enter the drainage structure. All OSHA requirements for confined space entry equipment and permitting shall be complied with. The CONTRACTOR shall obtain a confined space entry permit prior to beginning any work.

3.2. PREINSTALLATION/SURFACE PREPARATION

A. High Pressure grout: High pressure grout shall be injected from the interior of the structure surfaces into cracks and voids in order to stop leaks. The use of hydraulic cement will not be allowed.

1. Suitable equipment shall be utilized for pumping the grout from above ground through a hose and injecting the grout under pressure to fill voids beyond the structures. The equipment shall have a means of measuring the amount of grout used in gallons.

2. Grout shall be used in accordance with the manufacturer's recommendations for the specific application.

3. The following are acceptable grout products: Avanti AV-202 Multigrout or pre- approved equal.

B. Patching cement: After all loose and deteriorated material has been removed from the interior surfaces of the drainage structure and after all leaks have been grouted, patching cement shall be applied to fill in any irregularities to achieve an acceptable smooth surface.

1. Patching cement shall be compatible with the liner material as specified in item 2.1

C. Evaluation of Atmosphere: Prior to entering structures, an evaluation of the atmosphere shall be conducted to determine the presence of toxic, flammable vapors or possible lack of oxygen. The evaluation shall be in accordance with local, state or federal safety regulations.

D. Clean structure ring and cover free of rust and debris so the lid will properly seat when reinstalling the lid. Use power brushing such as wire wheel on a grinder/needle gun as most types of debris cannot be removed by hand wire brushing.

E. Surfaces to be lined shall be cleaned and abraded to produce a sound surface with adequate profile and porosity to provide strong bond between the lining and substrate.

F. High pressure water jetting (NACE Standard No. 5/SSPC-SP12) abrasive (sand) blasting, and mechanical wire-brushing shall be the methods to remove previous coatings, laitance, contaminated, disintegrated or chalky material. Detergent water cleaning and hot water blasting may be necessary to remove oil and grease.

G. Use of acid for cleaning purposes, no matter how dilute, will not be allowed. Loose or protruding brick, mortar and concrete shall be removed by using a mason's hammer and chisel. Fill any large voids with quick setting cement patch mix recommended by the manufacturer of liner products. The surface to be repaired must be clean and free of any loose materials.

H. Application of liner shall not be made unless the ambient Temperature inside the structure is 50 degrees F or higher.

I. After the patched areas have cured sufficiently, prepare drainage structure wall surfaces in accordance with the drainage structure liner manufacturer's recommendations.

J. All resurfaced or repaired surfaces shall be inspected for cleanliness and suitability to receive spray-applied loner. Additional surface preparation may be necessary prior to application.

K. Apply drainage structure liner in accordance with manufacturer's recommendation regarding temperature and installation procedures and in accordance with City of Fort Lauderdale specifications. The liner shall be applied to the invert and walls of the drainage structure from the bench up to the bottom of the casting.

L. Only manufacturer-certified personnel shall be permitted to install spray-applied liner.

M. Spray equipment shall be specifically designed to accurately ration and apply the coating products and shall be in good working order.

N. Prepared surfaces shall be lined by spray application to a minimum wet film thickness of 200 mils.

O. During application, a wet film thickness gauge meeting ASTM D4414 shall be used. All necessary measurements shall be taken and attested to by the CONTRACTOR. Written reports signed by the CONTRACTOR shall be given to the CITY and PROJECT MANAGER.

P. Allow the final application to cure for the amount of time recommended by the manufacturer before being subjected to sewage flow, or installation of spray-applied liner (where indicated).

3.3. QUALITY CONTROL

A. Inspect lining system for holidays, crack, and pinholes using the spark-test method and equipment in accordance with NACE RPO 188. Especially check the lining over brick, block, and very rough surfaces.

B. Repair voids and holidays per the manufacturer's instructions.

3.4. SAFETY

A. The CONTRACTOR shall carry out operations under this section in strict accordance with all applicable OSHA Standards. Particular attention is drawn to those safety requirements involving entry into a confined space. It shall be the CONTRACTOR's responsibility to comply with OSHA Standard and Regulations pertaining to all aspects of the work.

PART 4 WARRANTY

Provide a ten (10) year unlimited warranty on all workmanship and products. The work covered by the warranty shall include surface preparation, grouting, line application, as well as other work performed under this section. The warranty shall be effective beginning on the date of final acceptance by City of Fort Lauderdale, and shall guarantee that the drainage structure will be protected from leaks and from failure due to corrosion from exposure to corrosive chemicals normally encountered in stormwater.

END OF SECTION

SECTION 33410
STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Encasement for piping.
3. Manholes.
4. Tidal Valves.
5. Nonpressure transition couplings.
6. Expansion joints.
7. Catch basins.
8. Stormwater inlets.
9. Pipe outlets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:
1. Manholes: Include plans, elevations, sections, details, frames, and covers.

2. Catch basins and stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

C. Product Certificates: For each type of cast-iron soil pipe and fitting, from manufacturer.

D. Field quality-control reports.

1.4 PROJECT CONDITIONS

A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by CITY or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify PROJECT MANAGER no fewer than two (2) days in advance of proposed interruption of service.

2. Do not proceed with interruption of service without PROJECT MANAGER**'s** written permission.

PART 2 - PRODUCTS

2.1 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 74, Service class.

B. Gaskets: ASTM C 564, rubber.

C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.2 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Heavy-Duty, Shielded Couplings:

1. Description: ASTM C 1277 and ASTM C 1540, with stainless-steel shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.3 DUCTILE-IRON, CULVERT PIPE AND FITTINGS

A. Pipe: ASTM A 716, for push-on joints.

B. Standard Fittings: AWWA C110, ductile or gray iron, for push-on joints.

C. Compact Fittings: AWWA C153, for push-on joints.

D. Gaskets: AWWA C111, rubber.

2.4 PE PIPE AND FITTINGS

A. Corrugated PE Drainage Pipe and Fittings: AASHTO M 252M, Type S, with smooth waterway for coupling joints.

1. Silttight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with tube and fittings.

2. Soiltight Couplings: AASHTO M 252M, corrugated, matching tube and fittings.

B. Corrugated PE Pipe and Fittings: AASHTO M 294M, Type S, with smooth waterway for coupling joints.

1. Silttight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings.

2. Soiltight Couplings: AASHTO M 294M, corrugated, matching pipe and fittings.

2.5 PVC PIPE AND FITTINGS

A. PVC Corrugated Sewer Piping:

1. Pipe: ASTM F 949, PVC, corrugated pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM F 949, PVC molded or fabricated, socket type.
3. Gaskets: ASTM F 477, elastomeric seals.

2.6 CONCRETE PIPE AND FITTINGS

A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76.

1. Bell-and-spigot or tongue-and-groove ends and gasketed joints with ASTM C 443, rubber gaskets] [sealant joints with ASTM C 990, bitumen or butyl-rubber sealant.
2. Class II, Wall B or Wall C.
3. Class III, Wall B or Wall C.
4. Class IV, Wall A or Wall B.
5. Class V, Wall B or Wall C.

2.7 NONPRESSURE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:

1. For Concrete Pipes: ASTM C 443, rubber.
2. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
3. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
4. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:

1. Description: Elastomeric sleeve with **stainless-steel shear ring and** corrosion-resistant-metal tension band and tightening mechanism on each end.

D. Shielded, Flexible Couplings:

1. Description: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

E. Ring-Type, Flexible Couplings:

1. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.8 EXPANSION JOINTS

A. Ductile-Iron Flexible Expansion Joints:

1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**:
2. Basis-of-Design Product: Subject to compliance with requirements, provide **ductile-iron flexible expansion joint** or comparable product by one of the following:
   a. EBAA Iron Sales, Inc.
   b. Romac Industries, Inc.
   c. Star Pipe Products.
   d. or approved equal.
3. Description: Compound fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153. Include two gasketed ball-joint sections and one or more gasketed sleeve sections, rated for 250-psig minimum working pressure and for offset and expansion indicated.

2.9 TIDAL VALVES

A. Tidal Check Valves:

1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
   a. Tideflex's CheckMate Inline check valve
   b. Wapro's WaStop
   c. or approved equal.

2.10 ENCASEMENT FOR PIPING

A. Standard: ASTM A 674 or AWWA C105.

B. Material: Linear low-density polyethylene film of 0.008-inch or high-density, cross-laminated polyethylene film of 0.004-inch minimum thickness.

C. Form: **Sheet or tube**.

D. Color: Black.

2.11 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches minimum unless otherwise indicated.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation.
4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
5. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.
7. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
8. Resilient Pipe Connectors: ASTM C 923, cast or fitted into manhole walls, for each pipe connection.
9. Steps: **Individual FRP steps or FRP ladder** wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than **60 inches.**
10. Adjusting Rings: Interlocking HDPE rings with level or sloped edge in thickness and diameter matching manhole frame and cover, and of height required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
11. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, to match diameter of manhole frame and cover, and height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Manhole Frames and Covers:

1. Description: Ferrous; 24-inch ID by 7- to 9-inch riser with 4-inch- minimum width flange and 26-inch- diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "STORM SEWER."
2. Material: **ASTM A 48/A 48M, Class 35 gray** iron unless otherwise indicated.

2.12 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.

4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.

2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

C. Manhole Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.

a. Invert Slope: two percent (2%) through manhole.

2. Benches: Concrete, sloped to drain into channel.

a. Slope: four percent (4%).

D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.13 CATCH BASINS

A. Standard Precast Concrete Catch Basins:

1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.

2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.

3. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.

4. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.

5. Joint Sealant: ASTM C 990, bitumen or butyl rubber.

6. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.

7. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and grate.

8. Steps: Individual FRP steps or FRP ladder wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor

steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of catch basin to finished grade is less than **60 inches**.

9. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include flat grate with small square or short-slotted drainage openings.

1. Size: 24 by 24 inches minimum unless otherwise indicated.

2. Grate Free Area: Approximately 50 percent unless otherwise indicated.

C. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch- diameter flat grate with small square or short-slotted drainage openings.

1. Grate Free Area: Approximately 50 percent unless otherwise indicated.

2.14 STORMWATER INLETS

A. Curb Inlets: Made with vertical curb opening of materials and dimensions according to utility standards.

B. Gutter Inlets: Made with horizontal gutter opening of materials and dimensions according to utility standards. Include heavy-duty frames and grates.

C. Combination Inlets: Made with vertical curb and horizontal gutter openings of materials and dimensions according to utility standards. Include heavy-duty frames and grates.

D. Frames and Grates: Heavy duty.

2.15 PIPE OUTLETS

A. Head Walls: Cast-in-place reinforced concrete, with apron and tapered sides.

B. Riprap Basins: Broken, irregularly sized and shaped, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control."

1. Average Size: NSSGA No. R-3, screen opening 2 inches.

2. Average Size: NSSGA No. R-4, screen opening 3 inches.

3. Average Size: NSSGA No. R-5, screen opening 5 inches.

C. Filter Stone: According to NSSGA's "Quarried Stone for Erosion and Sediment Control," No. FS-2, No. 4 screen opening, average-size graded stone.

D. Energy Dissipaters: According to NSSGA's "Quarried Stone for Erosion and Sediment Control," No. A-1, 3-ton average weight armor stone, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

F. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.
2. Install piping **NPS 6** and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
3. Install piping with **36-inch** minimum cover.
4. Install hub-and-spigot, cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook."
5. Install hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook."
6. Install ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.
7. Install PE corrugated sewer piping according to ASTM D 2321.
8. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.
9. Install nonreinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."
10. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

G. Install corrosion-protection piping encasement over the following underground metal piping according to ASTM A 674 or AWWA C105:

1. Hub-and-spigot, cast-iron soil pipe and fittings.
2. Hubless cast-iron soil pipe and fittings.
3. Ductile-iron pipe and fittings.
4. Expansion joints.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:

1. Join hub-and-spigot, cast-iron soil piping with gasketed joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
2. Join hub-and-spigot, cast-iron soil piping with calked joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for lead and oakum calked joints.
3. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.
4. Join ductile-iron culvert piping according to AWWA C600 for push-on joints.
5. Join ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.
6. Join corrugated PE piping according to ASTM D 3212 for push-on joints.
7. Join PVC corrugated sewer piping according to ASTM D 2321 for elastomeric-seal joints.
8. Join nonreinforced-concrete sewer piping according to ASTM C 14 and ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
9. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
10. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 TIDAL VALVE INSTALLATION

A. Tidal valves shall be installed per manufacturer’s instruction and recommendations.

B. Any deviations from manufacturer’s instruction for installation shall be first approved by the PROJECT MANAGER, the manufacturer and shall not void the warranty of the tidal valves.

3.5 MANHOLE INSTALLATION

A. General: Install manholes, complete with appurtenances and accessories indicated.

B. Install precast concrete manhole sections with sealants according to ASTM C 891.

C. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.

D. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops **3 inches** above finished surface elsewhere unless otherwise indicated.

3.6 CATCH BASIN INSTALLATION

A. Set frames and grates to elevations indicated.

3.7 STORMWATER INLET[AND OUTLET] INSTALLATION

A. Construct inlet head walls, aprons, and sides of reinforced concrete, as indicated.

B. Construct riprap of broken stone, as indicated.

C. Install outlets that spill onto grade, anchored with concrete, where indicated.

D. Install outlets that spill onto grade, with flared end sections that match pipe, where indicated.

E. Construct energy dissipaters at outlets, as indicated.

3.8 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

3.9 CHANNEL DRAINAGE SYSTEM INSTALLATION

A. Install with top surfaces of components, except piping, flush with finished surface.

B. Assemble channel sections to form slope down toward drain outlets. Use sealants, adhesives, fasteners, and other materials recommended by system manufacturer.

C. Embed channel sections and drainage specialties in 4**-inch** minimum concrete around bottom and sides.

D. Fasten grates to channel sections if indicated.

E. Assemble channel sections with flanged or interlocking joints.

F. Embed channel sections in **4-inch** minimum concrete around bottom and sides.

3.10 CONNECTIONS

A. Connect nonpressure, gravity-flow drainage piping in building's storm building drains specified in Division 22 Section "Facility Storm Drainage Piping."

B. Make connections to existing piping and underground manholes.

1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.

2. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.

3. Make branch connections from side into existing piping, NPS 21 or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.

    a. Use concrete that will attain a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.

    b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.

4. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

C. Connect to sediment interceptors specified in Division 22 Section "Sanitary Waste Interceptors."

D. Pipe couplings and expansion joints with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.

    a. Shielded flexible couplings for same or minor difference OD pipes.

    b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.

    c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.11 IDENTIFICATION

A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.

1. Use detectable warning tape over ferrous piping.

2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.12 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.

2. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.

b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.

c. Damage: Crushed, broken, cracked, or otherwise damaged piping.

d. Infiltration: Water leakage into piping.

e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

2. Test completed piping systems according to requirements of authorities having jurisdiction.

3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.

4. Submit separate report for each test.

5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.

b. Option: Test plastic piping according to ASTM F 1417.

c. Option: Test concrete piping according to ASTM C 924.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION

SECTION 051916

CENTRIFUGALLY CAST CONCRETE PIPE (CCCP)
STORMWATER PIPE PROTECTIVE LINING METHOD

INSTALLATION SPECIFICATION GUIDELINE

1 Intent 2

2 Applicability 2

3 Referenced Standards 2

5 Invert Repair Mortar 3

6 Centrifugally Cast Concrete Pipe (CCCP) 4

7 Submittals 6

8 Product Handling 7

9 Quality Assurance and Acceptance 7

CENTRIFUGALLY CAST CONCRETE PIPE (CCCP)
STORMWATER PIPE PROTECTIVE LINING METHOD
BY CENTRIPIPE®

1 **Intent:** It is the intent of this specification to provide minimum standards for materials and methods for waterproofing, sealing, structural reinforcement and corrosion protection of existing stormwater corrugated metal, concrete, brick/mortar masonry, and clay pipe. The centrifugally cast concrete pipe (CCCP) **(Centripipe)** should extend over the specified length in a continuous structural concrete pipe within a pipe. This specification offers flexibility in design by offering technologies available for repairing the various defects found in these structures.

2 **Applicability:** These repair means and methods may be engineered for the depth, diameter, shape, traffic loading, groundwater pressures and condition of corrosion.

3 **Referenced Standard**

3.0	ASTM C-76	Standard specifications for Fly Ash content in Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
3.1	ASTM C-109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
3.2	ASTM C-157	Modified Standard Test Method for Length Change of Hardened Hydraulic Cement Mortar and Concrete
3.3	ASTM C-293	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)
3.4	ASTM C-309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
3.5	ASTM C-403	Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
3.6	ASTM C-469	Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
3.7	ASTM C-496	Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
3.8	ASTM C-882	Standard Test Method for Bond Strength of Epoxy Systems Used with Concrete by Slant Shear
3.9	ASTM C-1202	(AASHTO T 277 Equivalent) Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
3.10	ASTM C-666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
3.11	ASTM D-4783	Standard Test Methods for Resistance of Adhesive Preparations in Container to Attack by Bacteria, Yeast, and Fungi (Modified)
3.12	ASTM C-494	Standard Specification for Chemical Admixtures for Concrete TYPE S Corrosion Inhibiting Admixture for Microbial Induced Corrosion
3.13	ASTM C 1138	Standard Test Method for Abrasion Resistance of Concrete (Underwater Method)

4 **Preparation**

4.1 Safety: The Local & Federal Safety regulation and Contractor shall carry out his operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving entering confined spaces, local and Federal Safety regulation.

4.2 Flow Control: Before CCCP installation, all laterals and drop inlets must be sealed with a temporary plug. The Contractor, when required, shall provide for the flow of water around the section or sections of main pipe where the rehabilitation is located. The bypass shall

be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system or similarly suitable method. Pump and bypass lines shall be of adequate capacity to handle the flow. Once the desired liner thickness is met, CCCP material shall be allowed six hours curing time prior to all plugs being removed from the laterals and drop inlets and flows re-instated. Colder climates require longer cure times. See cold weather section.

4.3 TV Inspection: Inspection of pipelines shall be performed by experienced personnel trained in closed-circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation, and it shall be noted so that these conditions can be corrected. A videotape/CD/DVD and log sheet shall be kept for later reference by the owner.

4.4 Obstruction Removal: It shall be the responsibility of the Contractor to clear the line of obstructions such as debris, dropped joints, roots, protruding lateral or collapsed pipe that will prevent installation. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, then the Contractor shall notify the owner. The owner may instruct the Contractor to make a point repair excavation to remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's Representative prior to the commencement of the work and shall be considered as a separate pay item.

4.5 Infiltration Control: Areas of water seepage shall be sealed off by an approved method. Pools of water shall be removed; however, a dry surface is not required. The Contractor shall patch holes and fill voids in and around existing pipe as directed by the Engineer.

4.6 Cleaning: It shall be the responsibility of the Contractor to remove all debris from the pipe. The interior surface shall be cleaned with a high-pressure water-blast sufficient to remove all laitance and loose material and flush debris from the pipe.

5 Invert Repair Mortar

5.1 PL-12,000 Invert Repair Mortar

5.1.1 The material, **CENTRIPIPE® PL-12,000**, is an ultra high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives including rust inhibitors. When mixed with the appropriate amount of water, a self consolidating free flowing material will develop with high 24 hour compressive strength and adhesion.

5.1.2 The hardened material is dense and highly impermeable. The above performance is achieved by a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures. Graded quartz sands are used to enhance particle packing and further improve the fluidity and hardened density. The composition also possesses excellent thin-section toughness, high modulus of elasticity and self-bonding.

5.1.3 The water content may be adjusted to achieve consistencies ranging from free flowing to plastic. Despite its workability, the mortar has excellent wet adhesion.

5.1.4 Physical Properties

Set Time at 70 °F ASTM C-403	
Initial Set	Approx. 1 hour 30 minutes
Final Set	Approx. 4 hours
Flexural Strength ASTM C-293	

24 hours	min. 800 psi psi
28 days	min.1200 psi
Compressive Strength ASTM C-109	
24 hours	5,000 psi
28 days	11,500 psi
Split Tensile Strength ASTM C-496	700 psi
Shear Bond ASTM C-882	1,720 psi
Modulus of Elasticity ASTM C-469	
28 days	min. 3.48 $^{10.6}$
Freeze Thaw ASTM C-666	300 Cycle Pass
Chloride Permeability ASTM C-1202	<550 Coulombs
Abrasion Resistance ASTM C-1138(28 day Cure)	<3% Loss

6 Centrifugally Cast Concrete Pipe (CCCP)

6.1 PL-8,000 Pipe Lining Mortar

6.1.1 The material, **CENTRIPIPE® PL-8,000**, is a high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives. When mixed with the appropriate amount of water, a paste-like material will develop which may be sprayed, cast or pumped into any area ¼ inch and larger.

6.1.2 The hardened liner is dense and highly impermeable. The above performance is achieved by a complex proprocity formulation of mineral, organic and densifying agents and sophisticated chemical admixtures including rust inhibitors. Graded quartz sands are used to enhance particle packing and further improve the fluidity and hardened density. The composition also possesses excellent thin-section toughness, high modulus of elasticity and self-bonding. Fibers are added as an aid to casting, for increased cohesion and to enhance flexural strength.

6.1.3 The water content may be adjusted to achieve consistencies ranging from plastic to modeling clay. Despite its workability, the mortar has good wet adhesion and does not sag or run after placement. The mortar may be cast against soil, metals, wood, plastic or other normal construction material.

6.1.4 Mortar / material **MUST** be specifically designed for the horizontal pipelining process / CCCP and show 10 years of experience as well as manufacturer of said process and equipment.

6.1.5 Per ASTM C-76, in no case shall the proportion of Portland cement, blended with hydraulic cement, or a combination of Portland cement and supplementary cementing materials, be less than 470 pounds per cubic yard.

6.1.6 An admixture shall be included in the precise quantity required to promote the internal growth of a crystalline membrane structure in the otherwise watery pore space of a typical hardened hydrate system. The admixture shall react with unbound water and existing unstable calcium hydroxide hydrates to form a very strong and dense additional component to the Portland cement hydrate matrix. The addition of this specialty mineral enhances the autogenous healing process of the PL-8000 design. This characteristic shall be documented.

6.1.7 **Materials** must be **cementitious** in origin and any other materials that are not cementitious in nature will not be considered as an equal under any circumstances.

6.1.7 Physical Properties

Set Time at 70 °F ASTM C-403	
Initial Set	Approx. 170 minutes
Final Set	Approx. 300 minutes
Flexural Strength ASTM C-293	
24 hours	min. 1,200 psi
28 days	min.1,530 psi
Compressive Strength ASTM C-109	
24 hours	4,000 psi
28 days	10,000 psi
Split Tensile Strength ASTM C-496	835 psi
Shear Bond ASTM C-882	2,900 psi
Modulus of Elasticity ASTM C-469	
28 days	min. $5.26^{10.6}$
Freeze Thaw ASTM C-666	300 Cycle Pass
Chloride Permeability ASTM C-1202	<50 Coulombs

6.2 Design Criteria

6.2.1 The wall thickness design shall be based upon the compressive and bending strength of the liner material. The design loading shall be the sum of any changes in the cover depth after the liner's installation and the appropriate highway truck loading for the culvert pipe taking into account the type of soil used for the road's fill and the type of pavement structure (rigid or flexible). The calculated minimum finished thickness of the liner shall be based on a maximum possible crack width of 0.0625-inches with a factor of safety of 2.0.

6.2.2 The Liner thickness shall be applied to the thickness specified by the engineer but at no point shall it be less than the required minimum of ½-inch. For structural plate culvert materials, the cover over the projecting bolts shall be a minimum of ½-inch, making the minimum applied thickness for these culverts 1.0-inches. As Per ASTM A979 this thickness is to be measured from the I.D. of the pipe, or top of the inward corrugation's crest.

6.2.3 If additional thickness is desired at any section, simply place the rotating applicator at that section and recommence pumping and retrieval until that area is thickened. Additional layers may be applied at any time after initial set.

6.3 Centrifugally Cast Concrete Pipe (CCCP) Installation

6.3.1 Equipment: Mortar mixers, compressors and pumps are standard commercial models. The high-speed, bidirectional rotating applicator device is used to provide a densely compacted liner of uniform thickness and thorough coverage.

6.3.2 Mixing

6.3.2.1 Combine 50 pounds of the packaged dry mix with the specified amount of potable water while mixing with a high-speed shear mixer until proper consistency is obtained. Continue to agitate the mortar to prevent thickening beyond the desired fluidity. The working time is approximately 30 minutes depending upon ambient conditions?

6.3.3 Application

6.3.3.1 A bi-directional rotating Spincaster shall be used to ensure even liner thickness. The Spincaster shall be positioned within the center of the pipe and commence pumping the mixed mortar. As the mortar begins to be centrifugally cast evenly around the interior, retrieve the applicator head at the best speed for applying the thickness that has been selected. If flows are interrupted for any reason, simply arrest the retrieval of the applicator head until flows are restored.

6.3.3.2 The retrieval speed can be easily varied to create different thickness as the condition may dictate to provide sufficient strengths. Because of the even application throughout the circumference, thickness may be verified at any point.

6.3.3.3 If additional thickness is desired at any section, simply place the rotating applicator at that level reverse rotation direction and recommence pumping and retrieval until that area is thickened. Built-in bonding agents allow additional layers to be applied at any time.

6.3.3.4 The pressure application from the centrifugal casting of the mortar produces a finely textured surface that requires no additional troweling or finishing

6.3.3.5 A minimum of two passes must be completed with the **Bi-directional** spin caster head rotation in each direction to insure uniform liner thickness.

6.3.4 Hot Weather Application (Above 80° F)

6.3.4.1 Do not apply Centripipe mortars when ambient and surface temperatures are 100° F or 35° C and above. Shade the material and prepared the surface to keep it cool.

6.3.4.2 To extend working time, mix the material with cool water or ice-cooled water. Be certain the substrate is saturated surface-dry (SSD) before application begins.

6.3.4.3 Proper curing is always required and is particularly important in hot weather.

6.3.5 Cold Weather Application (Above 45° F):

6.3.5.1 Do not apply Centripipe mortars when ambient temperatures are expected to fall below 45°F or 7° C within 72 hours of placement. Both ambient and substrate temperatures must be at least 45° F or 7° C at the time of placement.

6.3.5.2 Low substrate and ambient temperatures slow down rate of set and strength development. At temperatures below 45° F or 7° C, warm the material, water, and substrate. Properly ventilate the area when heating. Protect the new liner from freezing.

7 Submittals

7.1 All submittals shall conform to the requirements of the Contract document.

7.2 In addition, the following items may be required of the installer to be submitted to the engineer at the sole discretion of the engineer. This Contract shall not be considered complete until receipt and acceptance of the following:

7.2.1 Reference submittals

7.2.1.1 Contractor shall submit certification from the manufacturer that they are licensed and trained.

7.2.1.2 Material certification, Manufacturer **MUST** have 10 years of experience in cementitious mortar production for centrifugal application. Mortar must be specifically designed for horizontal pipe lining process.

7.2.1.3 Contractor shall submit verifiable references showing a minimum of 5,000 lineal feet completed within the past three years.

7.2.1.4 Contractor shall provide an Engineering Design Guide upon request to prove the authenticity of calculations. In addition, a certified engineer's stamp will be required to approve the final design.

7.2.2 Product data

7.2.2.1 Patching and plugging material

7.2.2.2 Cementitious lining material

7.2.2.3 Cementitious lining with admixture

7.2.2.4 Independent third party testing reports less than (3) years old.

8 Product Handling

8.1 Special handling is not required for CENTRIPIPE® mortar. Normal precautions for "nuisance dust" shall be observed. Consult Material Safety Data Sheet for details.

8.2 The Contractor shall carry out his operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving entering confined spaces.

10 Quality Assurance and Acceptance

10.1 Two test cubes of the **CENTRIPIPE®** material shall be taken randomly as directed by the inspector at owner's expense to verify strengths. Thickness can be verified with a wet gage at any random point of the new interior surface. Any areas found to be thinner than minimum shall immediately receive additional material. Visual inspection should verify a leak-free, uniform appearance. Additionally, must **meet C-109 ASTM** testing standards.

10.2 **Pre and Post laser** profiling inspection to verify final liner thickness.

CENTRIPIPE™

PERMACAST® PL-12,000 Technical Data Sheet

INVERT-BASE REPLACEMENT

Ultra high strength, abrasion resistant mortar designed for replacement of damaged inverts in buried concrete and corrugated steel storm pipe.

It is the intent of this product to provide for the structural refurbishment and abrasion resistance of damaged inverts of buried storm pipe by the safe, quick and economical application of a high-strength, rapid setting factory-blended, construction grout that easily flows into voids, under and around damaged or missing inverts and sets rapidly in place to form a new invert.

PHYSICAL PROPERTIES

Color	Gray
Special Handling	None-keep dry
Shelf Life	One year
Water Demand	12.5% - 13.5%
Coverage	50# bag yields .4 cu. ft.
Working Time	30 minutes

NOMINAL VALUES

Set Time 70°F ASTM C-403	
Initial Set	Approx. 150 minutes
Final Set	Approx. 240 minutes
Compressive Strength ASTM C-109	
24 hours	5,000 psi
28 days	11,500 psi
Flexural Strength ASTM C-293	
24 hours	800 psi
28 days	1,200 psi
Slant Shear Bond ASTM C-882	
28 days	1,720 psi
Tensile Strength ASTM C-496	670 psi
Modulus of Elasticity ASTM C-469	
28 days	3.48×10^6
Freeze Thaw	300 Cycle Pass

The Physical properties contained herein were obtained under laboratory conditions at 72° F. Physical properties obtained under field conditions may vary do to environmental variables. Data are subject to reasonable deviation.

GENERAL

This information establishes the minimum standard for material and method of application for restoring and sealing leaking and deteriorated inverts in storm pipe by pumping and shaping the construction grout, PERMACAST® PL-12,000, into the prepared invert and voids in one application.

MATERIAL

The material, PERMACAST® PL-12,000, is an ultra high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives. When mixed with the appropriate amount of water, a self consolidating free flowing material will develop with high 24 hour compressive strength and adhesion.

The hardened material is dense and highly impermeable. The above performance is achieved by a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures including rust inhibitors. Graded quartz sands are used to enhance particle packing and further improve the fluidity and hardened density. The composition also possesses excellent thin-section toughness, high modulus of elasticity and self-bonding.

The water content may be adjusted to achieve consistencies ranging from free flowing to plastic. Despite its workability, the mortar has good wet adhesion.

EQUIPMENT

Mortar mixers, compressors and pumps are standard commercial models. Please contact AP/M for equipment specifications. The high speed, rotating applicator device is provided with the material to certified applicators.

MIXING
Combine 50 pounds of the packaged dry mix with 6-6.5 pints of clean (50°-70°F) water while mixing with a high-speed shear mixer until proper consistency is obtained. Continue to agitate the mortar to prevent thickening beyond the desired fluidity. The working time is approximately 30 minutes depending upon conditions.

PREPARATION
Pressure wash the interior surface with a high-pressure, water-blast sufficient to remove all loose material and debris. Remove rusted metal parts or sand blast to white metal if needed. Plug active leaks.

APPLICATION
Position the material hose at the far end of the deteriorated pipe and commence pumping the specially designed liner. As the mortar fills the invert void, retrieve the hose backward to the entry end. The mortar is shaped to conform generally to the radius of the original invert although it may be flat without significantly impacting the flow characteristics of the original pipe. If additional thickness is desired, additional material may be overlaid within the first 60 minutes without creating a cold joint.

CURING
Use an ASTM C309 conforming curing compound or COR+GARD ®Cure & Seal as required in the standard.

QUALITY ASSURANCE & ACCEPTANCE
All work shall be performed by factory certified applicators only. Mortar cube test samples for material strengths may be taken randomly as directed by the inspector for testing at the owner's expense. Thickness can be verified with a wet gage at any random point of the new interior surface. Any areas found to be thinner than minimum tolerances shall immediately receive additional material. Visual inspection should verify a leak-free, uniform appearance.

SAFETY
Observe OSHA standards for confined space entry.

WARRANTY and DISCLAIMER
The technical data herein provided is compiled from laboratory specimens in accordance with ASTM Standards. Test results from specimens made in the field may vary. Although this data is believed to be reliable, AP/M PERMAFORM makes no warranty express or implied, and further disclaims any liability as to the suitability of this information to a particular end use. This product is intended for use solely by our certified applicators.

AP/M PERMAFORM warrants its product to be free of manufacturing defects for one year from the date of purchase. ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. In no event will manufacturer be liable for special, incidental or consequential damages or personal injury. Our sole obligation and therefore the sole and exclusive remedy under this limited warranty whether in contract, tort, under any warranty, in negligence or otherwise shall be the replacement of nonconforming products at our factory.

Permacast®, Permaform®, and Cor+Gard® are registered trademarks of AP/M Permaform® Johnston, IA 50131 800-662-6465 (F) 515-276-1274 Copyright © 1995 PERMACAST® US patent 5,452,853 foreign patents pending.

AP/M Permaform
P.O. Box 555 • Johnston, IA 50131
800-662-6465
515-276-9610
515-276-1274 FAX

© Copyright 2008 AP/M Permaform®

PERMACAST® PL-8,000 Technical Data Sheet

CENTRIFUGALLY CAST CONCRETE PIPE

High strength, factory blended cementitious liner material designed for renewal of underground concrete storm and sanitary sewer pipe creating a new pipe within the old.

It is the intent of this product to provide for the waterproofing, sealing, structural reinforcement and corrosion protection of existing underground sewer pipe by the safe, quick and economical application of a uniform cementitious layer of special mortar that cures in place to form an interior hardened shell.

PHYSICAL PROPERTIES

Color	Gray
Special Handling	None-keep dry
Shelf Life	One year
Water Demand	118 - 128 fl. oz./bag
Coverage	50# bag yields .42 cu. ft.
Working Time	30 minutes

NOMINAL VALUES

Set Time at 70°F ASTM C-403	
Initial Set	Approx. 170 minutes
Final Set	Approx. 300 minutes
Compressive Strength ASTM C-109	
24 hours	4,000 psi
28 days	10,000 psi
Flexural Strength ASTM C-293	
24 hours	1,200 psi
28 days	1,530 psi
Slant Shear Bond ASTM C-882	
28 days	2,900 psi
Tensile Strength ASTM C-496	
28 days	835 psi
Sulfate Resistance ASTM C-267	No damage
*5% Solution H_2SO_4	30 days
*Samples received two coats of CS Identifier 300 sf per gallon coverage rate.	
Freeze Thaw ASTM C-666	300 Cycle Pass
Freeze Thaw Chloride Solution	300 Cycle <1%
Modulus of Elasticity ASTM C-469	
28 days 4-inch cylinder	5.26×10^6 psi
Rapid Chloride Permeability ASTM C-1202 (AASHTO T-277)	< 50 Coulombs

The Physical properties contained herein were obtained under laboratory conditions at 72° F. Physical properties obtained under field conditions may vary do to environmental variables. Data are subject to reasonable deviation.

GENERAL

This information establishes the minimum standard for material and method of application for restoring and sealing leaking and deteriorated sewer pipe, culvert pipe and manholes by centrifugally casting PERMACAST® PL-8,000, onto its interior in one or more passes at a specified thickness.

MATERIAL

The material, PERMACAST® PL-8,000, is a high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives. When mixed with the appropriate amount of water, a paste-like material will develop which may be sprayed, cast or pumped into any area ¼ inch and larger.

The hardened liner is dense and highly impermeable. The above performance is achieved by a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures including rust inhibitors. Graded quartz sands are used to enhance particle packing and further improve the fluidity and hardened density. The composition also possesses excellent thin-section toughness, high modulus of elasticity and self-bonding. Fibers are added as an aid to casting, for increased cohesion and to enhance flexural strength.

The water content may be adjusted to achieve consistencies ranging from plastic to modeling clay. Despite its workability, the mortar has good wet adhesion and does not sag or run after placement. The mortar may be cast against soil, metals, wood, plastic or other normal construction material.

EQUIPMENT

Mortar mixers, compressors and pumps are standard commercial models. Please contact AP/M for equipment specifications. The high speed, rotating applicator device is provided with the material to certified applicators.

MIXING
Combine 50 pounds of the packaged dry mix with 118-128 fl. oz. of clean (50°-70°F) water while mixing with a high-speed shear mixer until proper consistency is obtained. Continue to agitate the mortar to prevent thickening beyond the desired fluidity. The working time is approximately 30 minutes depending upon conditions.

PREPARATION
Pressure wash the interior surface with a high-pressure water-blast sufficient to remove all laitance and loose material and flush debris from the pipe. Plug active leaks and fill voids; use PL-12,000 for invert/base replacement.

APPLICATION
Position the rotating casting applicator within the center of the sewer pipe and commence pumping the mixed mortar. As the mortar begins to be centrifugally cast evenly around the interior, retrieve the applicator head at the best speed for applying the thickness that has been selected. If flows are interrupted for any reason, simply arrest the retrieval of the applicator head until flows are restored. The retrieval speed can be easily varied to create different thickness as the condition may dictate to provide sufficient strengths. Because of the even application throughout the circumference, thickness may be verified at any point. If additional thickness is desired at any level, simply place the rotating applicator at that level and recommence pumping and retrieval until that area is thickened. Built-in bonding agents allow additional layers to be applied at any time.

The pressure application from the centrifugal casting of the mortar produces a finely textured surface that requires no additional troweling or finishing

CURING
Use an ASTM C309 conforming curing compound or 1315 Sealer as required in the standard.

QUALITY ASSURANCE & ACCEPTANCE
All work shall be performed by factory certified applicators only. Mortar cube test samples for material strengths may be taken randomly as directed by the inspector for testing at the owner's expense. Thickness can be verified with a wet gage at any random point of the new interior surface. Any areas found to be thinner than minimum tolerances shall immediately receive additional material. Visual inspection should verify a leak-free, uniform appearance.

SAFETY
Observe OSHA standards for confined space entry.

WARRANTY and DISCLAIMER
The technical data herein provided is compiled from laboratory specimens in accordance with ASTM Standards. Test results from specimens made in the field may vary. Although this data is believed to be reliable, AP/M PERMAFORM makes no warranty express or implied, and further disclaims any liability as to the suitability of this information to a particular end use. This product is intended for use solely by our certified applicators.

AP/M PERMAFORM warrants its product to be free of manufacturing defects for one year from the date of purchase. ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. In no event will manufacturer be liable for special, incidental or consequential damages or personal injury. Our sole obligation and therefore the sole and exclusive remedy under this limited warranty whether in contract, tort, under any warranty, in negligence or otherwise shall be the replacement of nonconforming products at our factory.

Permacast®, Permaform®, Cor+Gard® and CentriPipe® are registered trademarks of AP/M Permaform® Johnston, IA 50131 800-662-6465 (F) 515-276-1274 Copyright © 1995 PERMACAST® US patent 5,452,853 foreign patents pending.

AP/M Permaform
P.O. Box 555 • Johnston, IA 50131
800-662-6465
515-276-9610
515-276-1274 FAX

© Copyright 2015 AP/M Permaform®

FDOT SECTION 104
PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION

104-1 Description.

Provide erosion control measures on the project and in areas outside the right-of-way where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects to public or private property adjacent to the project right-of-way and damage to work on the project. Construct and maintain temporary erosion control features or, where practical, construct and maintain permanent erosion control features as shown in the Plans or as may be directed by the Engineer.

104-2 General.

Coordinate the installation of temporary erosion control features with the construction of the permanent erosion control features to the extent necessary to ensure economical, effective, and continuous control of erosion and water pollution throughout the life of the Contract.

Due to unanticipated conditions, the Engineer may direct the use of control features or methods other than those included in the original Contract. In such event, the Department will pay for this additional work as unforeseeable work.

104-3 Control of Contractor's Operations Which May Result in Water Pollution.

Prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments with fuels, oils, bitumens, calcium chloride, or other harmful materials. Also, conduct and schedule operations to avoid or otherwise minimize pollution or siltation of such water impoundments, and to avoid interference with movement of migratory fish. Do not dump any residue from dust collectors or washers into any live stream.

Restrict construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals, and other water impoundments to those areas where it is necessary to perform filling or excavation to accomplish the work shown in the Plans and to those areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, promptly clear rivers, streams, and impoundments of all obstructions placed therein or caused by construction operations.

Do not frequently ford live streams with construction equipment. Wherever an appreciable number of stream crossings are necessary at any one location, use a temporary bridge or other structure.

Except as necessary for construction, do not deposit excavated material in rivers, streams, canals, or impoundments, or in a position close enough thereto, to be washed away by high water or runoff.

Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams or forms, treat the water by one or more of the following methods prior to discharge into State waters: pumping into grassed swales or appropriate vegetated areas or sediment basins, or confined by an appropriate enclosure such as turbidity barriers when other methods are not considered appropriate.

Do not disturb lands or waters outside the limits of construction as staked, except as authorized by the Engineer.

Obtain the Engineer's approval for the location of, and method of operation in, borrow pits, material pits, and disposal areas furnished for waste material from the project (other than commercially operated sources) such that erosion during and after completion of the work will not result in probability of detrimental siltation or water pollution.

104-4 Materials for Temporary Erosion Control.

The Engineer will not require testing of materials used in construction of temporary erosion control features other than as provided for geotextile fabric in 985-3 unless such material is to be incorporated into the completed project. When no testing is required, the Engineer will base acceptance on visual inspection.

The Contractor may use new or used materials for the construction of temporary silt fence, staked turbidity barriers, and floating turbidity barrier not to be incorporated into the completed project, subject to the approval of the Engineer.

104-5 Preconstruction Requirements.

At the Preconstruction Conference, provide to the Department an Erosion Control Plan meeting the requirements or special conditions of all permits authorizing project construction. If no permits are required or the approved permits do not contain special conditions or specifically address erosion and water pollution, the project Erosion Control Plan will be governed by 7-1.1, 7-2.2, 7-8.1, 7-8.2, and Section 104.

When a DEP generic permit is issued, the Contractor's Erosion Control Plan shall be prepared to accompany the Department's Stormwater Pollution Prevention Plan (SWPPP). Ensure the Erosion Control Plan includes procedures to control off-site tracking of soil by vehicles and construction equipment and a procedure for cleanup and reporting of non-storm water discharges, such as contaminated groundwater or accidental spills. Do not begin any soil disturbing activities until Department approval of the Contractor's Erosion Control Plan, including required signed certification statements.

Failure to sign any required documents or certification statements will be considered a default of the Contract. Any soil disturbing activities performed without the required signed documents or certification statements may be considered a violation of the DEP Generic Permit.

When the SWPPP is required, prepare the Erosion Control Plan in accordance with the planned sequence of operations and present in a format acceptable to the Department. The Erosion Control Plan shall describe, but not be limited to, the following items or activities:

1. For each phase of construction operations or activities, supply the following information:
    a. Locations of all erosion control devices
    b. Types of all erosion control devices
    c. Estimated time erosion control devices will be in operation
    d. Monitoring schedules for maintenance of erosion control devices
    e. Methods of maintaining erosion control devices
    f. Containment or removal methods for pollutants or hazardous wastes
2. The name and telephone number of the person responsible for monitoring and maintaining the erosion control devices.
3. Submit for approval the Erosion Control Plans meeting paragraphs 3a, 3b, or 3c below:

a. Projects permitted by the Southwest Florida Water Management District (SWFWMD), require the following:

Submit a copy of the Erosion Control Plan to the Engineer for review and to the appropriate SWFWMD Office for review and approval. Include the SWFWMD permit number on all submitted data or correspondence.

The Contractor may schedule a meeting with the appropriate SWFWMD Office to discuss his Erosion Control Plan in detail, to expedite the review and approval process. Advise the Engineer of the time and place of any meetings scheduled with SWFWMD.

Do not begin construction activities until the Erosion Control Plan receives written approval from both SWFWMD and the Engineer.

b. Projects permitted by the South Florida Water Management District or the St. Johns River Water Management District, require the following:

Obtain the Engineer's approval of the Erosion Control Plan.

Do not begin construction activities until the Erosion Control Plan receives written approval from the Engineer.

c. Projects authorized by permitting agencies other than the Water Management Districts or projects for which no permits are required require the following:

The Engineer will review and approve the Contractor's Erosion Control Plan.

Do not begin construction activities until the Erosion Control Plan receives written approval from the Engineer.

Comply with the approved Erosion Control Plan.

104-6 Construction Requirements.

104-6.1 Limitation of Exposure of Erodible Earth: The Engineer may limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other water impoundments or to prevent detrimental effects on property outside the project right-of-way or damage to the project. Limit the area in which excavation and filling operations are being performed so that it does not exceed the capacity to keep the finish grading, turf, sod, and other such permanent erosion control measures current in accordance with the accepted schedule.

Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 750,000 square feet without specific prior approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.

The Engineer may increase or decrease the amount of surface area the Contractor may expose at any one time.

104-6.2 Incorporation of Erosion and Sediment Control Features: Incorporate permanent erosion control features into the project at the earliest practical time. Use temporary erosion and sediment control features found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) to correct conditions that develop during construction which were not foreseen at the time of design, to control erosion and sediment prior to the time it is practical to construct permanent control features, or to provide immediate temporary control of erosion and sediment that develops during normal construction operations,

which are not associated with permanent erosion control features on the project. An electronic version of the E&SC Manual can be found at the following URL:

http://www.dot.state.fl.us/programmanagement/Implemented/URLinSpecs/Files/FLErosionSedimentManual.pdf

Install all sediment control devices in a timely manner to ensure the control of sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required.

Complete the installation of sediment control devices prior to the commencement of any earthwork.

After installation of sediment control devices, repair portions of any devices damaged at no expense to the Department. The Engineer may authorize temporary erosion and sediment control features when finished soil layer is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

104-6.3 Scheduling of Successive Operations: Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable.

Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

104-6.4 Details for Temporary Erosion and Sediment Control Features:

104-6.4.1 General: Use temporary erosion, sediment and water pollution control features found in the E&SC Manual. These features consist of, but are not limited to, temporary turf, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers, and chemical treatment. For design details for some of these items, refer to the Design Standards and E&SC Manual.

104-6.4.2 Temporary Turf: The Engineer may designate certain areas of turf or sod constructed in accordance with Section 570 as temporary erosion control features. For areas not defined as sod, constructing temporary turf by seeding only is not an option for temporary erosion control under this Section. The Engineer may waive the turf establishment requirements of Section 570 for areas with temporary turf that will not be a part of the permanent construction.

104-6.4.3 Runoff Control Structures: Construct runoff control structures in accordance with the details shown in the Plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function.

104-6.4.4 Sediment Containment Systems: Construct sediment containment systems in accordance with the details shown in the Plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function. Clean out sediment containment systems as necessary in accordance with the Plans or as directed.

104-6.4.5 Sediment Barriers: Provide and install sediment barriers according to details shown in the Plans, as directed by the Engineer, or as shown in the E&SC Manual to protect against downstream accumulation of sediment. Sediment Barriers include, but are not limited to synthetic bales, silt fence, fiber logs and geosynthetic barriers. Reusable barriers that have had sediment deposits removed may be reinstalled on the project as approved by the Engineer.

104-6.4.6 Silt Fence:

104-6.4.6.1 General: Furnish, install, maintain, and remove silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown in the Plans, the Design Standards, and the E&SC Manual.

104-6.4.6.2 Materials and Installation: Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 985 according to those applications for erosion control.

Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective silt fence that controls sediment comparable to the Design Standards and the E&SC Manual.

Erect silt fence at upland locations, across ditchlines and at temporary locations shown in the Plans or approved by the Engineer where continuous construction activities change the natural contour and drainage runoff. Do not attach silt fence to existing trees unless approved by the Engineer.

104-6.4.6.3 Inspection and Maintenance: Inspect all silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences as directed by the Engineer.

Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the silt fence or as directed by the Engineer. Dress any sediment deposits remaining in place after the silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 570.

104-6.4.7 Floating Turbidity Barriers and Staked Turbidity Barriers: Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the Plans or as approved by the Engineer. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The Engineer may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters and minimize damage to areas where floating barriers installed.

104-6.4.8 Inlet Protection System: Furnish and install inlet protection systems as shown in the Plans, Design Standards and the E&SC Manual.

104-6.4.9 Rolled Erosion Control Products (RECPs):

104-6.4.9.1 General: Install RECPs in locations where temporary protection from erosion is needed. Two situations occur that require artificial coverings. The two situations have differing material requirements, which are described below.

1. Use RECPs composed of natural or synthetic fiber mats, plastic sheeting, or netting as protection against erosion, when directed by the Engineer, during

temporary pauses in construction caused by inclement weather or other circumstances. Remove the material when construction resumes.

2. Use RECPs as erosion control blankets, at locations shown in the Plans, to facilitate plant growth while permanent grassing is being established. For the purpose described, use non-toxic, biodegradable, natural or synthetic woven fiber mats. Install erosion control blankets capable of sustaining a maximum design velocity of 6.5 ft/sec as determined from tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the Department. Furnish to the Engineer, two certified copies of manufacturers test reports showing that the erosion control blankets meet the requirements of this Specification. Certification must be attested, by a person having legal authority to bind the manufacturing company. Also, furnish two 4 by 8 inch samples for product identification. The manufacturers test records shall be made available to the Department upon request. Leave the material in place, as installed, to biodegrade.

104-6.4.10 Chemical Treatment: Provide chemical treatment in accordance with the E&SC Manual. Chemical treatment may be used to clarify turbid or sediment laden water that does not yet meet state water quality standards or as an amendment to other erosion prevention and sediment control products to aid in their performance. The contractor must provide all of the required toxicity testing information in accordance with the E&SC Manual to the Engineer for review and acceptance prior to using any chemical treatment on the project site.

104-6.5 Removal of Temporary Erosion Control Features: In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project in such a manner that no detrimental effect will result. The Engineer may direct that temporary features be left in place.

104-7 Maintenance of Erosion and Sediment Control Features.

104-7.1 General: Provide routine maintenance of permanent and temporary erosion and sediment control features, at no expense to the Department, until the project is complete and accepted. If reconstruction of such erosion and sediment control features is necessary due to the Contractor's negligence or carelessness or, in the case of temporary erosion and sediment control features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the Department. If reconstruction of permanent or temporary erosion and sediment control features is necessary due to factors beyond the control of the Contractor, the Department will pay for replacement under the appropriate Contract pay item or items.

Inspect all erosion and sediment control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.50 inches or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan, Contractor's Erosion Control Plan and as specified in the State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

104-8 Protection During Suspension of Contract Time.

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide

temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The Engineer may direct the Contractor to perform, during such suspensions of operations, any other erosion and sediment control work deemed necessary.

104-9 Method of Measurement.

When separate items for temporary erosion control features are included in the Contract, the quantities to be paid for will be:

1. the area, in square yards, of rolled erosion control products;
2. the length, in feet, of runoff control structures, measured along the surface of the work constructed;
3. the number of sediment containment systems constructed and accepted;
4. the number of sediment containment system cleanouts accomplished and accepted
5. the length, in feet, of sediment barriers;
6. the length, in feet, of floating turbidity barrier;
7. the length, in feet, of staked turbidity barrier;
8. the number of inlet protection systems;
9. the area, in square yards, of chemical treatment.
10. the number of floc logs or drums of product for chemical treatment.

Upon acceptance by the Engineer, the quantity of floating turbidity barriers, sediment barriers, staked turbidity barriers, and inlet protection devices will be paid for regardless of whether materials are new, used, or relocated from a previous installation on the project.

104-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control features.

Any additional costs resulting from compliance with the requirements of this Section, other than construction, routine maintenance, and removal of temporary erosion control features, will be included in the Contract unit prices for the item or items to which such costs are related. The work of performance turf designated as a temporary erosion control feature in accordance with 104-6.4.2 will be paid for under the appropriate pay items specified in the Contract Documents.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

Additional temporary erosion control features constructed as directed by the Engineer will be paid for as unforeseeable work.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the Department’s own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

Payment will be made under:

Item No. 104- 1-	Artificial Coverings/ Rolled Erosion Control Products - per square yard.
Item No. 104- 6-	Slope Drains (Temporary)/ Runoff Control Structures - per foot.
Item No. 104- 7-	Sediment Basins/ Containment Systems - each.
Item No. 104- 9-	Sediment Basin/ Containment system Cleanouts - each.
Item No. 104- 10-	Sediment Barriers – per foot
Item No. 104- 11-	Floating Turbidity Barrier - per foot.
Item No. 104- 12-	Staked Turbidity Barrier - per foot.
Item No. 104- 18	Inlet Protection System – each.
Item No. 104- 19	Chemical Treatment – per square yard.
Item No. 104 – 20	Chemical Treatment (floc logs, drums of product) - each.

FDOT SECTION 121
FLOWABLE FILL

121-1 Description.

Furnish and place flowable fill as an alternative to compacted soil as approved by the Engineer. Applications for conventional flowable fill include beddings; encasements; closures for tanks and pipes; and general backfill for trenches, embankments and walls. Applications for cellular concrete flowable fill include beddings; encasements; closures for tanks and pipes; and general backfill for embankments and walls.

121-2 Materials.

Meet the following requirements:

Fine Aggregate*.....Section 902
Portland Cement (Types I, II, or III).....Section 921
Water.....Section 923
Admixtures**.....Section 924
Fly Ash, Slag and other Pozzolanic Materials....Section 929
Preformed Foam.....ASTM C 869

*Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 15% passing a No. 200 sieve may be used.

**High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and shall be added at jobsite and mixed in accordance with the manufacturer's recommendation.

121-3 Mix Design.

Conventional flowable fill is a mixture of portland cement, fly ash, fine aggregate, admixture and water. Flowable fill contains a low cementitious content for reduced strength development. Cellular concrete flowable fill is a low density concrete made with cement, water and preformed foam to form a hardened closed cell foam material. Cellular concrete flowable fill may also contain fine aggregate, fly ash, slag and admixtures.

Submit mix designs to the Engineer for approval. The following are suggested mix guides for excavatable, non-excavatable and cellular concrete flowable fill:

	Excavatable	Non-Excavatable	Cellular Concrete
Cement	75-100 lb/yd^3	75-150 lb/yd^3	Min 150 lb/yd^3
Pozzolans or Slag	None	150-600 lb/yd^3	Optional
Water	*	*	*
Air**	5-35%	5-15%	****
28 Day Compressive Strength**	Maximum 100 psi	Minimum 125 psi	Minimum 80 psi
Unit Weight **	90-110 lb/ft^3	100-125 lb/ft^3	20-80 lb/ft^3
Fine Aggregate	***	***	Optional

*Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.
**The requirements for percent air, compressive strength and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements.
***Fine Aggregate shall be proportioned to yield 1 yd^3.
****In cellular concrete, preformed foam shall be proportioned at the job site to yield 1 yd^3 in accordance with the design requirements.

121-4 Production and Placing.

Use flowable fill manufactured at a production facility that meets the requirements of 347-3. Deliver flowable fill using concrete construction equipment. Revolution counter are waived. Place flowable fill by chute, pumping or other methods approved by the Engineer. Tremie flowable fill through water. Cellular concrete flowable fill may not be placed within three feet of the bottom elevation for roadway base courses.

121-5 Construction Requirements.

Use straps, soil anchors or other approved means of restraint to ensure correct alignment when flowable fill is used as backfill for pipe or where flotation or misalignment may occur.

Protect flowable fill from freezing for a period of 36 hours after placement.

Place flowable fill to the designated fill line without vibration or other means of compaction. Do not place flowable fill during inclement weather, e.g. rain or ambient temperatures below 40ºF. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

121-6 Acceptance.

Acceptance of flowable fill will be based on the following documentation and a minimum temperature of flowable fill at the point of delivery of 50ºF.

Furnish a delivery ticket to the Engineer for each load of flowable fill delivered to the worksite. Ensure that each ticket contains the following information:

1. Project designation,
2. Date,
3. Time,
4. Class and quantity of flowable fill,
5. Actual batch proportions,
6. Free moisture content of aggregates,
7. Quantity of water withheld.

Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer in accordance with ASTM C-403. Provide a hand held penetrometer to measure the penetration resistance of the hardened flowable fill.

121-7 Basis of Payment.

When the item of flowable fill is included in the Contract, payment will be made at the Contract unit price per cubic yard. Such price and payment will include all cost of the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

Payment will be made under:

Item No. 121- 70- Flowable Fill - per cubic yard.

FDOT SECTION 555
DIRECTIONAL BORE

555-1 Description.

555-1.1 Scope of Work: The work specified in this Section documents the approved construction methods and procedures for directional boring, also commonly called horizontal directional drilling (HDD).

555-1.2 General: HDD is a trenchless method for installing a product that serves as a carrier pipe for transporting solids, liquids or gasses (under pressure or gravity flow), or serves as a conduit, casing, or duct for a carrier pipe, cable, or wire line products. It is a multi-stage process consisting of site preparation and restoration, equipment setup, and drilling a pilot bore along a predetermined path and then pulling the product back through the drilled space. When necessary, enlargement of the pilot bore hole may be necessary to accommodate a product larger than the pilot bore hole size. This process is referred to as back reaming and is done at the same time the product is being pulled back through the pilot bore hole.

Accomplish alignment of the bore by proper orientation of the drill bit head as it is being pushed into the ground by a hydraulic jack and determine orientation and tracking of the drill bit. In order to minimize friction and prevent collapse of the bore hole, introduce a soil stabilizing agent (drilling fluid) into the annular bore space from the trailing end of the drill bit.

Select or design drilling fluids for the site specific soil and ground water conditions. Confine free flowing (escaping) slurry or drilling fluids at the ground surface during pull back or drilling. Remove all residual slurry from the surface and restore the site to preconstruction conditions.

555-2 Construction Site Requirements.

555-2.1 Pedestrian Traffic: When and where installations temporarily disrupt use of a pedestrian way, provide a safe alternate route in accordance with the Design Standards, Index Nos. 600 and 660.

555-2.2 Site Conditions:

1. Carry out excavation for entry, exit, recovery pits, slurry sump pits, or any other excavation as specified in Section 120. Sump pits are required to contain drilling fluids if vacuum devices are not operated throughout the drilling operation, unless approved by the Engineer.

2. Within 48 hours of completing installation of the product, clean the work site of all excess slurry or spoils. Take responsibility for the removal and final disposition of excess slurry or spoils. Ensure that the work site is restored to pre-construction conditions or as identified on the plans.

3. Provide MOT in accordance with the Design Standards and the MUTCD when and where the former is silent.

4. Exposure of product shall be limited to 3 feet and 14 consecutive days unless approved by the Engineer.

555-2.3 Damage Restoration: Take responsibility for restoration for any damage caused by heaving, settlement, separation of pavement, escaping drilling fluid (frac-out), or the directional drilling operation, at no cost to the Department.

555-2.3.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will

become part of the As-Built Plans Package. Remediation plans must follow the same guidelines for development and presentation of the as-built plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

555-3 Quality Control.

555-3.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring and Department procedures, present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin installation until the Engineer is present at the job site and agrees that proper preparations have been made.

555-3.1.1 Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop all work, notify the Engineer and investigate the damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours, unless otherwise approved by the Engineer. Furnish a copy of test results to the Engineer for review and approval. The Engineer is allowed up to 72 hours to approve or determine if the product installation is not in compliance with the specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill.

555-3.1.2 Testing Methods: Testing may consist of one of the following methods and must always meet or exceed the Department's testing requirements:

1. Follow the product manufacturer's pressure testing recommendations.
2. Ensure carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.
3. A water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders is required. The Engineer will determine when and where water tight joint requirements will be applied to the ultimate roadway section for future widening. When a product is located elsewhere, the pipe and joint configuration must meet or exceed soil tight joint requirements. Conduct tests for joint integrity for one hour. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 psi. The water tight joint criteria allows no leakage at all for a sustained pressure of 5 psi.

555-3.1.3 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids with excavatable flowable fill.

555-3.2 Product Locating and Tracking: The method of locating and tracking the drill head during the pilot bore will be shown in the Plans. The Department recognizes walkover, wire line, and wire line with surface grid verification, or any other system as approved by the Engineer, as the accepted methods of tracking directional bores. Use a locating and tracking system capable of ensuring the proposed installation is installed as intended. If an area of radio signal interference is expected to exceed 5 feet, the Engineer may specify the use of a suitable tracking system. The locating and tracking system must provide information on:

1. Clock and pitch information
2. Depth
3. Transmitter temperature
4. Battery status
5. Position (x,y)

6. Azimuth, where direct overhead readings (walkover) are not possible (i.e. subaqueous or limited access transportation facility)

7. Ensure proper calibration of all equipment before commencing directional drilling operation.

8. Take and record alignment readings or plot points such that elevations on top of and offset dimensions from the center of the product to a permanent fixed feature are provided. Such permanent fixed feature must have prior approval of the Engineer. Provide elevations and dimensions at all bore alignment corrections (vertical and horizontal) with a minimum distance between points of 100 feet. Provide a sufficient number of elevations and offset distances to accurately plot the vertical and horizontal alignment of the installed product. A minimum of three elevation and plot points are required.

555-3.3 Product Bore Hole Diameter: Minimize potential damage from soil displacement/settlement by limiting the ratio of the bore hole to the product size. The size of the back reamer bit or pilot bit, if no back reaming is required, will be limited relative to the product diameter to be installed as follows:

Maximum Pilot or Back-Reamer Bit Diameter When Rotated 360 Degrees	
Outside Pipe Diameter Inches*	Maximum Bit Diameter Inches
<8	Diameter + 4
8 to 24	1.5 x Diameter
>24	Diameter + 12
*Use manufacturer's recommendation for pipe with restrained joints.	

555-3.4 Drilling Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Do not use any other chemicals or polymer surfactants in the drilling fluid without written consent from the Engineer. Certify to the Engineer in writing that any chemicals to be added are environmentally safe and not harmful or corrosive to the facility. Identify the source of water for mixing the drilling fluid. Any water source used other than a potable water source may require a pH test.

555-4 Drilling Operations:

555-4.1 Installation Process: Ensure adequate removal of soil cuttings and stability of the bore hole by monitoring the drilling fluids such as the pumping rate, pressures, viscosity and density during the pilot bore, back reaming and pipe installation. Relief holes can be used as necessary to relieve excess pressure down hole. Obtain the Engineer's approval of the location and all conditions necessary to construct relief holes to ensure the proper disposition of drilling fluids is maintained and unnecessary inconvenience is minimized to other facility users.

To minimize heaving during pull back, the pull back rate is determined in order to maximize the removal of soil cuttings without building excess down hole pressure. Contain excess drilling fluids at entry and exit points until they are recycled or removed from the site or vacuumed during drilling operations. Ensure that entry and exit pits are of sufficient size to contain the expected return of drilling fluids and soil cuttings.

Ensure that all drilling fluids are disposed of or recycled in a manner acceptable to the appropriate local, state, or federal regulatory agencies. When drilling in suspected contaminated ground, test the drilling fluid for contamination and appropriately dispose of it.

Remove any excess material upon completion of the bore. If in the drilling process it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue drilling without the Engineer's approval.

When conditions warrant, as determined by the Engineer, back reaming for enlarging the bore diameter shall be accomplished by connecting the reamer to trailing drill stems at the exit pit of the pilot bore. The drill pipe shall remain in the bore hole until the final product is pulled into place. After the pilot bore is established, do not push anything from the entry pit to the exit pit.

The timing of all boring processes is critical. Install a product into a bore hole within the same day that the pre-bore is completed to ensure necessary support exists.

555-4.2 Boring Failure: If an obstruction is encountered during boring which prevents completion of the installation in accordance with the design location and specification, the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If, during construction, damage is observed to the FDOT facility, cease all work until resolution to minimize further damage and a plan of action for restoration is obtained and approved by the Engineer.

555-5 Documentation Requirements.

555-5.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within seven days of the completion of each bore path. Include the following in the report:

1. Location of project and financial project number including the Permit Number when assigned
2. Name of person collecting data, including title, position and company name
3. Investigation site location (Contract plans station number or reference to a permanent structure within the project right of way)
4. Identification of the detection method used
5. Elevations and offset dimensions as required in 555-3.2

555-5.2 As-Built Plans: Provide the Engineer a complete set of as-built plans showing all bores (successful and failed) within 30 calendar days of completing the work. Ensure that the plans are dimensionally correct copies of the Contract Plans and include roadway plan and profile, cross-section, boring location and subsurface conditions as directed by the Engineer. The plans must show appropriate elevations referenced to a permanent FDOT feature (mast arm foundation, manhole inlet cover, head wall, etc). Plans must be same scale in black ink on white paper, of the same size and weight as the Contract Plans. Submittal of electronic plans data in lieu of hard copy plans is preferred and may be approved by the Engineer if compatible with the Department software. Specific plans content requirements include but may not be limited to the following:

1. The Contract plan view shows the center line location of each facility installed, or installed and placed out of service, to an accuracy of 1 inch at the ends and other points physically observed in accordance with the bore path report.
2. As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and crown elevation of each facility installed, or installed and placed out of service, to an accuracy of within 1 inch at the ends and other exposed locations. On profile plans for bore paths crossing the roadway, show stationing of the crossing

on the Contract Plans. On the profile plans for the bore paths paralleling the roadway, show the Contract Plans stationing. If the profile plan for the bore path is not made on a copy of one of the Contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

3. If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the product is left in place and taken out of service, show the failed bore path along with the final bore path on the plans. Note the failed bore path as “Failed Bore Path - Taken Out of Service”. Also show the name of the utility owner, location and length of the drill head and any drill stems not removed from the bore path.

4. Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

5. Include bore notes on each plan stating the final bore path diameter, product diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the product, or facility placed out of service. Note if the product is a casing as well as the size and type of carrier pipes placed within the casing as part of the Contract work.

555-6 Compensation.

No direct payment will be made for directional bore. Include the cost to perform this operation in the Contract price for the item being installed.

FDOT SECTION 556
JACK AND BORE

556-1 Description.

556-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Jack and Bore (J&B), also known as auger boring. Micro tunneling (MT) is also included in the category of J&B for purposes of specifications.

556-1.2 General: J&B is a method for installing a product (often called a casing) that may serve as a direct conduit for liquids or gases, or as a duct for carrier (Pipe, cable, or wire line products). It is a multi-stage process consisting of constructing a temporary horizontal jacking platform and a starting alignment track in an entrance pit at a desired elevation. The product is then jacked by manual control along the starting alignment track with simultaneous excavation of the soil being accomplished by a rotating cutting head in the leading edge of the product's annular space. The ground up soil (spoil) is transported back to the entrance pit by helical wound auger flights rotating inside the product. J&B typically provides limited tracking and steering as well as limited support to the excavation face.

Micro tunneling is conducted similar to J&B with the exception that it is remotely controlled, guided pipe jacking process that provides continuous support to the excavation face. The guidance system usually consists of a laser mounted in the tunneling drive shaft which communicates a reference line to a target mounted inside the MT machine's articulated steering head. The MT process provides the ability to control the excavation face stability by applying mechanical or fluid pressure to counterbalance the earth and hydrostatic pressures.

Removal and disposition of excess material varies, is the responsibility of the boring contractor and is not covered under this Specification. However, the cost of removal or final disposition is included in the cost of the J&B operation.

No J&B conduit may be left open ended without approval of the Engineer to prevent the conduit from acting as a drainage structure.

556-2 Materials.

Select materials approved for installation within the right-of-way based on their suitability for the construction method as defined in Table 556-2.1. After determining product suitability, individual material standards as contained in Table 556-2.2 apply.

Table 556-2.1
Product Suitability by Construction Method

Type	Pipe/Casing Installation Mode	Suitable Pipe/Casing
Jack and Bore	Jacking	Steel, Plastic
Micro tunneling	Jacking	DI, FRPM, PC, PCCP, RCCP, RCP, Steel

Table 556-2.2
Material Standards Acceptable for J&B and MT Installations

Material Type	Non-Pressure	Pressure
Ductile Iron (DI)	AWWA C150/C151 ASTM A716	AWWA C150/C151

Table 556-2.2 Material Standards Acceptable for J&B and MT Installations		
Material Type	Non-Pressure	Pressure
Fiberglass Reinforced Polymer Mortar (FRPM)	ASTM D3262	ASTM D3517 AWWA C950
Polymer Concrete (PC)	DIN 54815-1 & 2	N/A
Prestressed Concrete Cylinder Pipe (PCCP)	N/A	AWWA C301
Reinforced Concrete Cylinder Pipe (RCCP)	N/A	ASTM C361
Reinforced Concrete Pipe (RCP)	ASTM C 76	ASTM C361 AWWA C300/C302
Steel	ASTM A139 Grade B(1) API 2B(2)	AWWA C200 API 2B(2)
Polyvinyl Chloride (PVC)	ASTM D1785	ASTM D1785
Acrylonitrile Butadiene Styrene (ABS)	ASTM D1527	ASTM D1527
Reinforced Thermosetting Resin Pipe (RTRP)	ASTM D2996 or ASTM D2997	ASTM D2996 or ASTM D2997
(1) No hydrostatic test required (2) Dimensional tolerances only		

Unless otherwise tested and approved by the Department, only use encasement pipe or uncased carrier pipe material that is new and has smooth interior and exterior walls.

When the Plans show that the casing is to be used as a drainage carrier pipe, extend the casing the entire length from drainage structure to drainage structure. Maintain a uniform diameter, wall thickness and material type for the entire length of the casing.

556-2.1 Steel Pipe Casing and Welds: In addition to meeting or exceeding the conditions contained in Table 556-2.1 and Table 556-2.2, meet the following requirements:

1. The size of the steel casing must be at least 6 inches larger than the largest outside diameter of the carrier. Casing size must accommodate pressure pipe or carrier pipe joint restraints.
2. The casing pipe must be straight seam pipe, spiral seam pipe, or seamless pipe.
3. All steel pipe may be bare inside and out, with the manufacturer's recommended minimum nominal wall thicknesses to meet the greater of either installation, loading or carrier requirements.
4. All steel casing pipe must be square cut and have dead-even lengths which are compatible with the J&B equipment.

Use steel pipe casings and welds meeting or exceeding the thickness requirements to achieve the service life requirements noted in the Department Drainage Manual Chapter 6. For purposes of determining service life, ensure that casings installed under roadways meet or exceed cross drain requirements and casings under driveways meet or exceed side drain pipe requirements. For purposes of material classification, consider steel pipe casing structural plate steel pipe. Ensure that steel pipe casing of insufficient length achieves the required length through fully welded joints. Ensure that joints are air-tight and continuous over the entire circumference of the pipe with a bead equal to or exceeding the minimum of either that required

to meet the thickness criteria of the pipe wall for jacking and loading or service life. All welding shall be done in accordance with the American Welding Society Structural Welding Code-Steel D1.1.

556-2.2 Reinforced Concrete Pipe Casing: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and Table 556-2.2, meet the following requirements:

Ensure that concrete pipe complies with the following minimum requirements:

1. 5,000 psi concrete compressive strength
2. Class III, IV, or V as required by load calculations, with a C-wall
3. Full circular inner and/or outer reinforcing cage
4. Multiple layers of steel reinforcing cages, wire splices, laps and spacers are permanently secured together by welding in place
5. Straight outside pipe wall with no bell modification
6. No elliptical reinforcing steel is allowed
7. Single cage reinforcement with a 1 inch minimum cover from the inside wall
8. Double cage reinforcement with a 1 inch minimum cover from each wall
9. Joints are gasket type
10. Additional joint reinforcement

Upon installation, the Engineer may, at his discretion, require the Contractor to perform concrete wiping or injection of the joints if it is believed the joints have not maintained their water tightness during the jacking operation. No additional payment will be made for this operation.

556-2.3 Plastic Pipe Casing: Plastic pipe may be jacked and bored if its physical properties are sufficient, and it is rigid such that when supported or suspended at mid point it maintains a straight alignment. If plastic pipe is Jacked and Bored it may not be used as a pressurized carrier. Plastic pipe casing installed by the jack and bore method requires the use of an auger. Open end jacking without the use of an auger for continuous cleanout of the bore as the pipe is advanced is not permitted. Closed end jacking is not permitted.

556-2.4 Pipe Couplings and Joints: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and 556-2.2, to minimize potential for bore failure, couplings must not project at right angles from the casing diameter by more than 3/4 inch.

1. Steel Pipe Coupling and Joints:
   a. Welds must comply with 556-2.1(4) when couplings are not used or when the coupling thickness is less than the casing thickness.
   b. When couplings are used the casing joint needs only to be tack welded. Couplings must have a full bead weld such that the thickness, when measured at an angle of 45 degrees to the casing and coupling interface, must be no less than the casing thickness.
2. Plastic Pipe Couplings and Joints:
   a. Must meet or exceed all ASTM strength and composition standards established for the casing material to which they are being attached.
   b. Joints must be made sufficiently strong to withstand the pressures of jacking. All chemical welds must be completely set and cured before any jacking is attempted.

556-3 Construction Site Requirements.

556-3.1 Site Conditions:

1. Carry out excavation for entry, exit, recovery pits, auger slurry sump pits, or any other excavation as specified in Section 120. Unless approved by the Engineer, sump pits are required to contain auger fluids if vacuum devices are not operated throughout the boring operation.

2. Within 48 hours of completing installation of the boring product, ensure that the work site is cleaned of all excess auger fluids or spoils. Removal and final disposition of excess fluids or spoils is the responsibility of the boring Contractor and ensure that the work site is restored to pre-construction conditions or as identified in the Plans.

3. Restore excavated areas in accordance with the specifications and Design Standards.

4. Provide MOT in accordance with the Department Design Standards and the MUTCD when and where the former is silent.

5. Ensure that equipment does not impede visibility of the roadway user without taking the necessary precautions of proper signing and Maintenance of Traffic Operations.

556-3.2 Ground Water Control: Investigate all sites for possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.

When ground water level must be controlled, use a system and equipment that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.

556-3.3 Damage Restoration: Take responsibility for restoring any damage caused by heaving, settlement, separation of pavement, escaping boring fluid (frac-out) of the J&B operation at no cost to the Department.

556-3.3.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans Package. Remediation plans must follow the same guidelines for development and presentation of the As-Built Plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

556-4 Quality Control.

556-4.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring, and Department procedures present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin the installation until the Engineer is present at the job site and agrees that proper preparations have been made.

556-4.2 Construction Process and Approval: For all installations, submit sufficient information to establish the proposed strategy for providing the following:

1. An indication of where the leading edge of the casing is located with respect to line and grade and the intervals for checking line and grade. Indication may be provided by using a water gauge (Dutch level) or electronic transmitting and receiving devices. Other methods must have prior approval. Maintain a record of the progress at the job site.

2. Equipment of adequate size and capability to install the product and including the equipment manufacturer’s information for all power equipment used in the installation.

3. A means for controlling line and grade.

4. A means for centering the cutting head inside the borehole.

5. Provide a means for preventing voids by assuring:

a. The rear of the cutting head from advancing in front of the leading edge of the casing by more than 1/3 times the casing diameter and in stable cohesive conditions not to exceed 8 inches.

b. In unstable conditions, such as granular soil, loose or flowable materials, the cutting head is retracted into the casing a distance that permits a balance between pushing pressure, pipe advancement and soil conditions.

c. Development of and maintaining a log of the volume of spoil material removal relative to the advancement of the casing.

6. Adequate casing lubrication with a bentonite slurry or other approved technique.

7. An adequate band around the leading edge of the casing to provide extra strength in loose unstable materials when the cutting head has been retracted into the casing to reduce skin friction as well as provides a method for the slurry lubricant to coat the outside of the casing.

8. At least 20 feet of full diameter auger at the leading end of the casing. Subsequent auger size may be reduced, but the reduced auger diameter must be at least 75% of the full auger diameter.

9. Water to be injected inside the casing to facilitate spoil removal. The point of injection shall be no closer than 2 feet from the leading edge of the casing.

556-4.3 Testing:

556-4.3.1 Testing Requirements: Ensure all casing joints meet the Department's watertight pressure requirements in accordance with Section 430. Testing may consist of one of the following methods but must always meet or exceed Department testing requirements.

1. Follow the Product Manufacturer's pressure testing recommendations.

2. Ensure that the product carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.

a. The Department requires a water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders. The Engineer will determine when and where water tight joint requirements shall be applied to the ultimate roadway section for future widening. When under the pavement conduct an air pressure test for leaks in the presence of the Engineer at a minimum test pressure of 20 PSI by either of the following methods.

1. Standard 24 hour pressure test with a recording chart or,

2. A dragnet type leak detector or equivalent device capable of detecting pressure drops of 1/2 PSI for a time period recommended by the manufacturer.

b. When a product is not located under the pavement, the pipe and joint configuration must meet or exceed soil tight joint requirements. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 PSI. The water tight joint criteria allows no leakage at all for a sustained pressures of 5 PSI. Conduct test for joint integrity for one hour.

556-4.3.2 Damaged Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop the work, notify the Engineer and investigate damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours unless otherwise approved by the Engineer. Furnish a copy of the test results to the Engineer for review and approval. The Engineer shall be

allowed up to 72 hours to approve or determine if the product installation is not in compliance with specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill at no cost to the Department.

556-4.4 Product Locating and Tracking: Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two separate and continuous conductive tracking (tone wire) materials, either externally, internally, or integral with the product. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Ensure that conductors are located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of 3 inches overlap. Tracking conductors must extend 2 feet beyond bore termini. Conductors must be tested for continuity. Identify each conductor that passes by removing the last 6 inches of the sheath. No deductions are allowed for failed tracking conductors. Failed conductor ends must be wound into a small coil and left attached for future use.

556-4.5 Augering Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Vary the fluid viscosity to best fit the soil conditions encountered. Do not use other chemicals or polymer surfactant in the drilling fluid without written consent of the Engineer. Certify in writing to the Engineer that any chemicals to be added are environmentally safe and not harmful or corrosive to the facility. Identify the source of water for mixing the drilling fluid. Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than potable water may require a pH Test.

556-4.6 Micro-Tunneling (MT) and Micro Tunnel Boring Machine (MTBM) Requirements:

556-4.6.1 Performance Requirements: The MTBM must meet the following minimum performance requirements:

1. Capable of providing positive face support regardless of the MTBM type.
2. Articulated to enable controlled steering in both the vertical and horizontal direction to a tolerance of plus or minus 1 inch from design alignment.
3. All functions are controlled remotely from a surface control unit.
4. Capable of controlling rotation, using a bi-directional drive on the cutter head or by using anti-roll fins or grippers. The Engineer must approve other methods.
5. Capable of injecting lubricant around the exterior of the pipe being jacked.
6. Indication of steering direction.

For slurry systems, the following is also required:

7. The volume of slurry flow in both the supply and return side of the slurry loop.
8. Indication of slurry bypass valve position.

9. Indication of pressure of the slurry in the slurry chamber.

556-4.7 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids by injecting all taken out of service products that have any annular space with excavatable flowable fill.

556-5 Jack and Bore and Micro-Tunneling Operations:

556-5.1 Installation Process: Provide continuous pressure to the face of the excavation to balance groundwater and earth pressures. Ensure that shafts are of sufficient size to accommodate equipment, the pipe selected and to allow for safe working practices. Provide entry and exit seals at shaft walls to prevent inflows of groundwater, soil, slurry and lubricants. Use thrust blocks designed to distribute loads in a uniform manner so that any deflection of the thrust block is uniform and does not impart excessive loads on the shaft itself or cause the jacking frame to become misaligned.

The jacking system must have the capability of pushing the pipe in J&B operations or MTBM and pipe for MT operations through the ground in a controlled manner and be compatible with the anticipated jacking loads and pipe capacity. Monitor the jacking force applied to the pipe and do not exceed the pipe manufacturer's recommendations.

Ensure that the pipe lubrication system is functional at all times and sufficient to reduce jacking loads. Use pipe lubrication systems that include a mixing tank, holding tank and pumps to convey lubricant from the holding tank to application points at the rear of the MTBM. Maintain sufficient fluids on site to avoid loss of lubrication.

Power Distribution System must be identified in the Plans package or permit provisions as well as any noise constraints. Identity spoil removal capability and method to avoid creating hindrance to other activities which may be necessary in the area.

556-5.2 Excess Material and Fluids: Monitor the pumping rate, pressures, viscosity and density of the boring fluids to ensure adequate removal of soil cuttings and the stability of the borehole. Contain excess drilling fluids, slurry and soil cuttings at entry and exit points in pits until they are recycled or removed from the site.

Ensure that all boring fluids are disposed of or recycled in a manner acceptable to the appropriate local, state or federal regulatory agencies. When jacking and boring in suspected contaminated ground, test the boring fluid for contamination and dispose of appropriately. Remove any excess material upon completion of the bore. If it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue boring without the Engineer's approval.

556-5.3 Boring Failure: If an obstruction is encountered which prevents completion of the installation in accordance with the design location and specifications; the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If damage is observed to any property, cease all work until a plan of action to minimize further damage and restore damaged property is submitted and approved by the Engineer.

556-6 Documentation Requirements.

556-6.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within 14 days of the completion of each bore path. Submit the As-Built-Plans to the Engineer within

30 calendar days. No payment will be made for directional boring work until the Bore Path Report has been delivered to the Department. Include the following information in the report:

1. Location of project and financial project number including the Permit Number when assigned.
2. Name of person collecting data, including title, position and company name.
3. Investigation site location (Contract Plans station number or reference to a permanent structure within the project right-of-way).
4. Identification of the detection method used.
5. Spoils removal log.
6. As-built placement plans showing roadway plan and profile, cross-section, boring location and subsurface conditions as defined in Bore Path Plans below. Reference the shown plan elevations to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum or to the top of an existing Department head wall. These plans must be the same scale in black ink on white paper, of the same size and weight and as the Contract Plans. Submittal of electronic plans data in lieu of hard copy plans may be approved by the Engineer if compatible with the Department software.

556-6.2 As-Built Plans: Provide the Engineer with a complete set of As-Built-Plans showing all bores (successful and failed) within 30 calendar days of completion of the work. Plans must be dimensionally correct copies of the Contract Plans. Include notes on the plans stating the final bore path diameter, facility diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the facility or facility placed out of service. If the facility is a casing, note this, as well as the size and type of carrier pipes to be placed within the casing as part of the Contract work. Produce the plans as follows:

1. On the Contract plan view, show the centerline location of each facility, installed or installed and placed out of service to an accuracy within 1 inch at the ends and other points physically observed. They show the remainder of the horizontal alignment of the centerline of each facility installed or installed and placed out of service and note the accuracy with which the installation was monitored.

3. As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Also show the ground or pavement surface and the crown elevation of each facility installed, or installed and placed out of service, accurately to within 1 inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans for bore paths crossing the roadway, show the Contract Plans stationing. On the profile plans for bore paths paralleling the roadway show the Contract Plans stationing. If the profile plan for the bore path is not made on a copy of one of the contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

4. If a bore path is not completed, show on the plans the failed bore path along with the name of the utility owner and the final bore path. Note the failed bore path as “Failed Bore Path.” Also show the location and length of the cutting head and any product not removed from the bore path.

5. Show the crown elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during subsoil investigation or the installation, show the type of material, horizontal

and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

556-7 Compensation.

No direct payment will be made under this Section. Include the cost to perform this operation in the Contract unit price for the item being installed.

No compensation will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service or incomplete installations.

No compensation will be made for the pay item associated with the jack and bore until a Bore Path Report has been delivered to the Engineer.

QUESTIONNAIRE SHEET

PLEASE PRINT OR TYPE:

Firm Name:

President

Business Address:

Telephone:

Fax:

E-Mail Address:

What was the last project of this nature which you completed?

The following are named as three corporations and representatives of those corporations for which you have performed work similar to that required by this contract, and which the City may contact as your references (include addresses and telephone numbers):

How many years has your organization been in business?

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

The name of the qualifying agent for the firm and his position is:

Certificate of Competency Number of Qualifying Agent:

Effective Date: Expiration Date:

Licensed in: Contractor's License #(s)

(County/State)

Expiration Date:

NOTE: To be considered for award of this contract, the bidder must submit a financial statement upon request.

Contractor must have proper licensing prior to submitting bid and must submit evidence of same with bid.

QUESTIONNAIRE SHEET

1. Have you personally inspected the proposed work and have you a complete plan for its performance?

2. Will you sublet any part of this work? If so, list the portions or specialties of the work that you will.

a)
b)
c)
d)
e)
f)
g)

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

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

5. What equipment will you rent for the proposed work?

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

MINORITY BUSINESS ENTERPRISE (MBE) - WOMEN BUSINESS ENTERPRISE (WBE)

PRIME CONTRACTOR IDENTIFICATION FORM

In order to assist us in identifying the status of those companies doing business with the City of Fort Lauderdale, this form must be completed and returned with your bid package.

Name of Firm:

Address of Firm:

Telephone Number:

Name of Person Completing Form:

Title:

Signature:

Date:

City Project Number:

City Project Description:

Please check the item(s) which properly identify the status of your firm:

☐ Our firm is not a MBE or WBE.

☐ Our firm is a MBE, as at least 51 percent is owned and operated by one or more socially and economically disadvantaged individuals.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic

☐ Our firm is a WBE, as at least 51 percent is owned and operated by one or more women.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic

MBE/WBE CONTRACTOR INFORMATION

The City, in a continuing effort, is encouraging the increased participation of minority and women-owned businesses in Public Works Department related contracts. Along those lines, we are requiring that each firm provide documentation detailing their own programs for utilizing minority and women-owned businesses.

Submit this information as a part of this bid package and refer to the checklist, to ensure that all areas of concern are covered. The low responsive bidder may be contacted to schedule a meeting to discuss these objectives. It is our intention to proceed as quickly as possible with this project, so your cooperation in this matter is appreciated.

CONTRACTOR CHECKLIST

☐ List Previous City of Fort Lauderdale Contracts

☐ Number of Employees in your firm

--Percent (%) Women

--Percent (%) Minorities

--Job Classifications of Women and Minorities

☐ Use of minority and/or women subcontractors on past projects.

☐ Nature of the work subcontracted to minority and/or women-owned firms.

☐ How are subcontractors notified of available opportunities with your firm?

☐ Anticipated amount to be subcontracted on this project.

☐ Anticipated amount to be subcontracted to minority and/or women-owned businesses on this project.

TRENCH SAFETY

Bidder acknowledges that included in the appropriate bid items of his bid and in the Total Bid Price are costs for complying with the Florida Trench Safety Act, Florida Statutes 553.60 – 553.64. The bidder further identifies the costs of such compliance to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF/SF)	Unit (Quantity)	Unit Cost	Extended Cost
A.			$	$
B.			$	$
C.			$	$
D.			$	$

Total: $

The bidder certifies that all trench excavation done within his control in excess of five feet (5') in depth shall be in accordance with the Occupational Safety and Health Administration's excavation safety standards, C.F.R. s. 1926.650 Subpart P., and the Florida Trench Safety Act, Florida Statutes 553.60-553.64.

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

DATE: _____ _____
(SIGNATURE)

STATE OF: _____ COUNTY OF: _____

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

_____
(Name of Individual Signing)

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

_____
NOTARY PUBLIC

My Commission Expires: _____

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and free from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).

3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City is transitioning from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale, to receive your payment fast and safely. No more waiting for checks to be printed and mailed.

In accordance with Article 7, item 7.6 of the contract, payments on this contract will be made utilizing the City's P-Card. Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

Please indicate with which credit card you prefer to be paid:

☐ Master Card

☐ Visa Card

Company Name: _____

Signature: _____

Print Name Title: _____

CONSTRUCTION BID CERTIFICATION

Please Note: All fields below must be completed. If the field does not apply to you, please note N/A in that field. If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration)

Address:

City: State: Zip:

Telephone No. FAX No. Email:

Does your firm qualify for MBE or WBE status: MBE ☐ WBE ☐

If a corporation, state the name of the President, Secretary and Resident Agent. If a partnership, state the names of all partners. If a trade name, state the names of the individuals who do business under the trade name.

Name	**Title**	**Name**	**Title**
Name	**Title**	**Name**	**Name**

ADDENDUM ACKNOWLEDGEMENT - Bidder acknowledges that the following addenda have been received and are included in the bid:

Addendum No.	Date Received	Addendum No.	Date Received	Addendum No.	Date Received	Addendum No.	Date Received

VARIANCES: If you take exception or have variances to any term, condition, specification, or requirement in this bid you must specify such variance in the space provided below or reference in the space provided below all variances contained on other pages within your bid. Additional pages may be attached if necessary. No variances will be deemed to be part of the bid submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. If submitting your response electronically through BIDSYNC you must also click the "Take Exception" button.

The below signatory affirms that he has or will obtain all required permits and licenses from the appropriate agencies, and that his firm is authorized to do business in the State of Florida. The below signatory agrees to furnish all labor, tools, material, equipment and supplies, and to sustain all the expense incurred in doing the work set forth in strict accordance with the bid plans and contract documents at the unit prices indicated if awarded a contract. The below signatory has not divulged to, discussed, or compared this bid with other bidders, and has not colluded with any other bidder or parties to this bid whatsoever. Furthermore, the undersigned guarantees the truth and accuracy of all statements and answers contained in this bid. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a bid, that in no event shall the City's liability for bodder's direct, indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City protest ordinance contained in this competitive solicitation.

Submitted by:

Name (printed)	Signature
Date:	Date:

Question and Answers for Bid #673-11892 - Stormwater Lining, CCTV and Trenchless Technologies (P12210)

Overall Bid Questions
There are no questions associated with this bid.