# Solicitation 12204-293

# Annual Sewer Repairs and Replacement P12448

# Bid Designation: Public

CITY OF FORT LAUDERDALE

# City of Fort Lauderdale

# Bid 12204-293
# Annual Sewer Repairs and Replacement P12448

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|---|---|
| Bid Number | 12204-293 |
| Bid Title | Annual Sewer Repairs and Replacement P12448 |
| Bid Start Date | May 24, 2019 4:25:56 PM EDT |
| Bid End Date | Jul 9, 2019 2:00:00 PM EDT |
| Question & Answer End Date | Jun 20, 2019 5:00:00 PM EDT |
| Bid Contact | Jim Hemphill<br>Sr. Procurement Specialist<br>Procurement Department<br>954-828-5143<br>jhemphill@fortlauderdale.gov |
| Contract Duration | **2 years** |
| Contract Renewal | 2 annual renewals |
| Prices Good for | **120 days** |

Bid Comments

**Sealed bids will be received electronically until 2:00 P.M., local time, on Monday July 1st, 2019, and opened immediately thereafter in the 5th Floor Conference Room, City Hall, 100 North Andrews Avenue, Fort Lauderdale, Florida, 33301, for BID NO.122204-293, PROJECT NO., 12448 Annual Sewer Repairs and Replacement Contract .**

**This project is located City-wide, in the City of Fort Lauderdale. The work to be accomplished under this contract includes, but is not limited to, rehabilitation of 8 inch through 36 inch mainline sanitary sewers and water mains. Point repairs of mainlines and laterals. Manhole repairs, testing and sealing of pipe joints, flow bypass, and related activities required to provide a complete and functional rehabilitation of the mainline wastewater collection system and water distribution system.**

**Quantities listed are not representative of prior contract quantities. Quantities for this contract are indefinite. Contractor shall provide a unit price for each line item.**

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

**Licensing Requirements: Contractor must possess a certified general contractor license OR a certified underground utility and excavation contractor license issued by the Florida Department of Business and Professional Regulation. Contractor must have proper licensing prior to submitting bid and must submit evidence of same with bid**

**There will not be a pre-bid meeting or site visit for this Invitation to Bid.**

**Bidding blanks may be obtained free of charge at BIDSYNC.COM. Drawing Plans are on file in the Public Works Department, City of Fort Lauderdale, at 100 North Andrews Avenue, 4th floor, (Monday thru Friday 8:00 am to 4:30 pm) at a NON-REFUNDABLE cost of $0.00 (including sales tax per set). Only cash or cashier's check made payable to the City of Fort Lauderdale are accepted**

**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 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) 828-5933.**

**Addendum # 1**

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|---|---|---|---|
| New Documents | **Addendum 1.doc** | | |
| Previous End Date | Jul 1, 2019 2:00:00 PM EDT | New End Date | Jul 9, 2019 2:00:00 PM EDT |

**Item Response Form**

Item **12204-293--01-01 -** BASE BID TOTAL: Well Point System

Lot Description BASE BID TOTAL

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 all labor, materials, accessories, equipment and tools necessary for the installation of a complete well point system, including but not limited to well points, common header, wellpoint pumps, discharge hose and sedimentation tank, up to 40LF around excavation, all depths.

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Item **12204-293--01-02 -** BASE BID TOTAL: Well Point System **- Additional**

Lot Description BASE BID TOTAL

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost for complete well point system in excess of 40LF under item 1. (10 linear foot increase).

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Item **12204-293--01-03 -** BASE BID TOTAL: Bypass

Lot Description BASE BID TOTAL

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 all labor, materials, accessories, equipment and tools necessary for the installation of bypass piping and pumping system between manholes where work is being done on gravity sewer. Work shall include placing plugs in each affected manhole and any other items required to provide a complete functioning bypass system.

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Item **12204-293--01-04 -** BASE BID TOTAL: Sewer Pipe 8**-inch - 10-inch (PVC C-900), 0 to -5 below existing grade**

Lot Description BASE BID TOTAL

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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sanitary sewer pipe (PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to -5 below existing grade.

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|---|---|
| Item | **12204-293--01-05 -** BASE BID TOTAL: Sewer Pipe 8**-inch - 10-inch (PVC C-900), -5.01 to 10 below existing grade** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sanitary sewer pipe (PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation -5 to -10 below existing grade.

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|---|---|
| Item | **12204-293--01-06 -** BASE BID TOTAL: Sewer Pipe 8**-inch - 10-inch (PVC C-900), -10.01 to -15 below existing grade** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sanitary sewer pipe (PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation -10.01 to -15 below existing grade.

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|---|---|
| Item | **12204-293--01-07 -** BASE BID TOTAL: Sewer Pipe Additional Footage, PVC C**-900 IE 0 to -5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**

Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF. Invert Elevation 0 to -5 below existing grade.

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|---|---|
| Item | **12204-293--01-08 -** BASE BID TOTAL: Sewer Pipe Additional Footage,PVC C**-900 IE -5.01 to -10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF. Invert Elevation -5.01 to -10 below existing grade.

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|---|---|
| Item | **12204-293--01-09 -** BASE BID TOTAL: Sewer Pipe Additional Footage,PVC C**-900 IE -10.01 to -15 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF. Invert Elevation -10.01 to -15 below existing grade.

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|---|---|
| Item | **12204-293--01-10 -** BASE BID TOTAL: Sewer Pipe 12**-inch - 15-inch (PVC C-900), Additional cost** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 12-inch - 15-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), all depths.

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| Item | **12204-293--01-11 -** BASE BID TOTAL: Sewer Pipe 18**-inch - Additional cost** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 18-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), all depths.

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| Item | **12204-293--01-12 -** BASE BID TOTAL: Sewer Pipe 24**-inch - Additional cost** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 24-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), all depths.

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| Item | **12204-293--01-13 -** BASE BID TOTAL: Sewer Pipe 30**-inch - Additional cost** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 30-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), all depths.

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| Item | **12204-293--01-14 -** BASE BID TOTAL: Sewer Pipe 36**-inch - Additional cost** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications |

Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost to repair or replace existing gravity sanitary sewer pipe (PVC C-900) 36-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), all depths.

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| Item | **12204-293--01-15 -** BASE BID TOTAL: Sewer Pipe 4**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer pipe 4-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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|---|---|
| Item | **12204-293--01-16 -** BASE BID TOTAL: Sewer Pipe 4**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer pipe 4-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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|---|---|
| Item | **12204-293--01-17 -** BASE BID TOTAL: Sewer Pipe 6**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 6-inch

diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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|---|---|
| Item | **12204-293--01-18 -** BASE BID TOTAL: Sewer Pipe 6**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 6-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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|---|---|
| Item | **12204-293--01-19 -** BASE BID TOTAL: Sewer Pipe Additional Footage (4**-in - 6-in),(DIP) IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe 4-inch - 6-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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|---|---|
| Item | **12204-293--01-20 -** BASE BID TOTAL: Sewer Pipe Additional Footage (4**-in - 6-in), (DIP) IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe 4-inch - 6-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-21 -** BASE BID TOTAL: Sewer Pipe 8**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 8-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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|---|---|
| Item | **12204-293--01-22 -** BASE BID TOTAL: Sewer Pipe 8**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 8-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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|---|---|
| Item | **12204-293--01-23 -** BASE BID TOTAL: Sewer Pipe 10**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 10-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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|---|---|
| Item | **12204-293--01-24 -** BASE BID TOTAL: Sewer Pipe 10**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |

| | |
|---|---|
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 10-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-25 -** BASE BID TOTAL: Sewer Pipe Additional Footage (8**-in and 10-in), (DIP) IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |
| | See ITB Specifications |
| | See ITB Specifications |
| | Fort Lauderdale FL 33301 |
| | **Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe(Restrained DIP Epoxy Lined) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-26 -** BASE BID TOTAL: Sewer Pipe Additional Footage (8**-in and 10-in), (DIP) IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |
| | See ITB Specifications |
| | See ITB Specifications |
| | Fort Lauderdale FL 33301 |
| | **Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe (Restrained DIP Epoxy Lined) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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|---|---|
| Item | **12204-293--01-27 -** BASE BID TOTAL: Sewer Pipe 12**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 12-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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|---|---|
| Item | **12204-293--01-28 -** BASE BID TOTAL: Sewer Pipe 12**-inch, 5 to 10 feet in depth, up to 20 feet in length(DIP)** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 12-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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|---|---|
| Item | **12204-293--01-29 -** BASE BID TOTAL: Sewer Pipe 16**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 16-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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|---|---|
| Item | **12204-293--01-30 -** BASE BID TOTAL: Sewer Pipe 16**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 16-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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|---|---|
| Item | **12204-293--01-31 -** BASE BID TOTAL: Sewer Pipe Additional Footage (12**-in - 16-in), (DIP) IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe 12-inch - 16-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-32 -** BASE BID TOTAL: Sewer Pipe Additional Footage (12**-in- 16-in),(DIP)IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe 12-inch - 16-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-33 -** BASE BID TOTAL: Sewer Pipe 20**-inch, 5 to 15 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 20-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 15 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-34 -** BASE BID TOTAL: Sewer Pipe 24**-inch, 5 to 15 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 24-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 15 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-35 -** BASE BID TOTAL: Sewer Pipe Additional Footage (20**-in - 24-in), (DIP) IE 5 to 15 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe 20-inch - 24-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-36 -** BASE BID TOTAL: Sewer Pipe 30**-inch, 5 to 15 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 20-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 15 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-37 -** BASE BID TOTAL: Sewer Pipe 36**-inch, 5 to 15 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |

| | |
|---|---|
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing sewer main pipe 24-inch diameter (Restrained DIP Epoxy Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 15 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-38 -** BASE BID TOTAL: Sewer Pipe Additional Footage (30**-in and 36-in), (DIP) IE 5 to 15 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing sewer main pipe 30-inch - 36-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-39 -** BASE BID TOTAL: Remove pipe install new |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Remove existing pipe and install new pipe into existing sanitary manhole, all depths.

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| | |
|---|---|
| Item | **12204-293--01-40 -** BASE BID TOTAL: Water Pipe 4**-inch, 0 to 5 feet in depth, up to 20 feet in length (PVC C-900)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 4-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-41 -** BASE BID TOTAL: Water Pipe 4**-inch, 5 to 10 feet in depth, up to 20 feet in length (PVC C-900)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 4-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-42 -** BASE BID TOTAL: Water Pipe 6**-inch, 0 to 5 feet in depth, up to 20 feet in length (PVC C-900)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 6-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-43 -** BASE BID TOTAL: Water Pipe 6**-inch, 5 to 10 feet in depth, up to 20 feet in length (PVC C-900)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 6-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-44 -** BASE BID TOTAL: Water Pipe Additional Footage (4**-in - 6-in),C-900,IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 4-inch - 6-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-45 -** BASE BID TOTAL: Water Pipe Additional Footage (4**-in - 6-in),C-900,IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 4-inch - 6-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-46 -** BASE BID TOTAL: Water Pipe 8**-inch, 0 to 5 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 8-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-47 -** BASE BID TOTAL: Water Pipe 8**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |

| | |
|---|---|
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 8-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-48 -** BASE BID TOTAL: Water Pipe 10**-inch, 0 to 5 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 10-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-49 -** BASE BID TOTAL: Water Pipe 10**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 10-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-50 -** BASE BID TOTAL: Water Pipe Additional Footage (8**-in - 10-in), C-900,IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost to repair or replace existing water main pipe (Restrained PVC C-900)8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-51 -** BASE BID TOTAL: Water Pipe Additional Footage (8**-in - 10-in),C-900, IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost to repair or replace existing water main pipe(Restrained PVC C-900) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-52 -** BASE BID TOTAL: Water Pipe 12**-inch, 0 to 5 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 12-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-53 -** BASE BID TOTAL: Water Pipe 12**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 12-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-54 -** BASE BID TOTAL: Water Pipe 16**-inch, 0 to 5 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 16-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-55 -** BASE BID TOTAL: Water Pipe 16**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 16-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-56 -** BASE BID TOTAL: Water Pipe Additional Footage (12**-in - 16-in),C-900,IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 12-inch - 16-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-57 -** BASE BID TOTAL: Water Pipe Additional Footage (12**-in - 16-in),C-900,IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 12-inch - 16-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-58 -** BASE BID TOTAL: Water Pipe 20**-inch, 0 to 5 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 20-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-59 -** BASE BID TOTAL: Water Pipe 20**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 20-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-60 -** BASE BID TOTAL: Water Pipe 24**-inch, 0 to 5 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 24-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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Item **12204-293--01-61 -** BASE BID TOTAL: Water Pipe 24**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900**

Lot Description BASE BID TOTAL

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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 24-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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Item **12204-293--01-62 -** BASE BID TOTAL: Water Pipe Additional Footage (20**-in - 24-in),C-900,IE 0 to 5 below grade**

Lot Description BASE BID TOTAL

Quantity **1 linear foot**

Unit Price

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

**Description**
Additional cost to repair or replace existing water main pipe 20-inch - 24-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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Item **12204-293--01-63 -** BASE BID TOTAL: Water Pipe Additional Footage (20**-in - 24-in),C-900,IE 5 to 10 below grade**

Lot Description BASE BID TOTAL

Quantity **1 linear foot**

Unit Price

Delivery Location **City of Fort Lauderdale**
See ITB Specifications

See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost to repair or replace existing water main pipe 20-inch - 24-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-64 -** BASE BID TOTAL: Water Pipe 30**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 30-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-65 -** BASE BID TOTAL: Water Pipe 36**-inch, 5 to 10 feet in depth, up to 20 feet in length,C-900** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 36-inch diameter (Restrained PVC C-900), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-66 -** BASE BID TOTAL: Water Pipe Additional Footage (30**-in - 36-in),C-900,IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**

Additional cost to repair or replace existing water main pipe 30-inch - 36-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-67 -** BASE BID TOTAL: Water Pipe 4**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | **BASE B**ID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 4-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-68 -** BASE BID TOTAL: Water Pipe 4**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 4-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-69 -** BASE BID TOTAL: Water Pipe 6**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 6-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-70 -** BASE BID TOTAL: Water Pipe 6**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 6-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-71 -** BASE BID TOTAL: Water Pipe Additional Footage (4**-in - 6-in),(DIP) IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 4-inch - 6-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-72 -** BASE BID TOTAL: Water Pipe Additional Footage (4**-in - 6-in), (DIP) IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 4-inch - 6-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-73 -** BASE BID TOTAL: Water Pipe 8**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |

| | |
|---|---|
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 8-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-74 -** BASE BID TOTAL: Water Pipe 8**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 8-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-75 -** BASE BID TOTAL: Water Pipe 10**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 10-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-76 -** BASE BID TOTAL: Water Pipe 10**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications |

See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 10-inch diameter(Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-77 -** BASE BID TOTAL: Water Pipe Additional Footage (8**-in - 10-in), (DIP) IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost to repair or replace existing water main pipe (Restrained DIP Cemented Lined)8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-78 -** BASE BID TOTAL: Water Pipe Additional Footage (8**-in - 10-in), (DIP) IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Additional cost to repair or replace existing water main pipe (Restrained DIP Cemented Lined) 8-inch - 10-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-79 -** BASE BID TOTAL: Water Pipe 12**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 12-

inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-80 -** BASE BID TOTAL: Water Pipe 12**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 12-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-81 -** BASE BID TOTAL: Water Pipe 16**-inch, 0 to 5 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 16-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 0 to 5 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-82 -** BASE BID TOTAL: Water Pipe 16**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 16-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-83 -** BASE BID TOTAL: Water Pipe Additional Footage (12**-in - 16-in), (DIP) IE 0 to 5 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 12-inch - 16-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-84 -** BASE BID TOTAL: Water Pipe Additional Footage (12**-in - 16-in), (DIP) IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 12-inch - 16-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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| | |
|---|---|
| Item | **12204-293--01-85 -** BASE BID TOTAL: Water Pipe 20**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 20-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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| | |
|---|---|
| Item | **12204-293--01-86 -** BASE BID TOTAL: Water Pipe 24**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 24-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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Item **12204-293--01-87 -** BASE BID TOTAL: Water Pipe Additional Footage (20**-in - 24-in), (DIP) IE 5 to 10 below grade**

Lot Description BASE BID TOTAL

Quantity **1 linear foot**

Unit Price

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

**Description**
Additional cost to repair or replace existing water main pipe 20-inch - 24-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

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Item **12204-293--01-88 -** BASE BID TOTAL: Water Pipe 30**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)**

Lot Description BASE BID TOTAL

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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 30-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

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Item **12204-293--01-89 -** BASE BID TOTAL: Water Pipe 36**-inch, 5 to 10 feet in depth, up to 20 feet in length (DIP)**

Lot Description BASE BID TOTAL

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 all labor, materials, accessories, equipment and tools necessary for the repair/replacement of existing water main pipe 36-inch diameter (Restrained DIP Cemented Lined), including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20LF (maximum length of pipe). Invert Elevation 5 to 10 below existing grade.

| | |
|---|---|
| Item | **12204-293--01-90 -** BASE BID TOTAL: Water Pipe Additional Footage (30**-in - 36-in), (DIP) IE 5 to 10 below grade** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Additional cost to repair or replace existing water main pipe 30-inch - 36-inch diameter, including but not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), in excess of 20LF.

| | |
|---|---|
| Item | **12204-293--01-91 -** BASE BID TOTAL: Lateral |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new, repair, or replace existing 6-inch diameter lateral line or lateral stack including but not limited to all fittings, wyes, tees, and bends, excavation, shoring, steel plates, bedding, fill material, density tests (12 lifts), up to 20 LF.

| | |
|---|---|
| Item | **12204-293--01-92 -** BASE BID TOTAL: Lateral Additional Footage |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new, repair, or replace existing 6-inch diameter lateral line or lateral stack, in excess of 20 LF beyond centerline of main.

| | |
|---|---|
| Item | **12204-293--01-93 -** BASE BID TOTAL: Lateral Additional |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new, repair, or replace existing lateral line or existing single or double lateral stack, including new wyes, tees, and bends at locations already excavated for other repairs under Items 4-6.

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| | |
|---|---|
| Item | **12204-293--01-94 -** BASE BID TOTAL: F&I 6**-inch clean-out on existing lateral (Conventional)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install 6-inch clean-out on existing lateral (Conventional)

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| | |
|---|---|
| Item | **12204-293--01-95 -** BASE BID TOTAL: F&I 6**-inch clean-out on existing lateral (Vac -A-Tee)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install 6-inch clean-out on existing lateral (Vac -A-Tee)

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| | |
|---|---|
| Item | **12204-293--01-96 -** BASE BID TOTAL: New Manhole **- from 0 feet to 5 feet deep** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301 |

**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new precast concrete 4·ft. diameter sanitary sewer manhole, including but not limited to structure, excavation, bedding material, cast·iron frame and cover and all necessary pipe tie·ins for a complete installation, including shop drawings. Heigh of structure from 0 feet to 5 feet.

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Item **12204-293--01-97 -** BASE BID TOTAL: New Manhole **- from 5 feet to 8 feet deep**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the installation of new precast concrete 4·ft. diameter sanitary sewer manhole, including but not limited to structure, excavation, bedding material, cast·iron frame and cover and all necessary pipe tie·ins for a complete installation, including shop drawings. Heigh of structure from 5 feet to 8 feet.

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Item **12204-293--01-98 -** BASE BID TOTAL: New Manhole **- from 8 feet to 12 feet deep**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the installation of new precast concrete 4·ft. diameter sanitary sewer manhole, including but not limited to structure, excavation, bedding material, cast·iron frame and cover and all necessary pipe tie·ins for a complete installation, including shop drawings. Heigh of structure from 8 feet to 12 feet.

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Item **12204-293--01-99 -** BASE BID TOTAL: New Manhole **- from 12 feet to 15 feet**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the installation of new precast concrete 4·ft. diameter sanitary sewer manhole, including but not limited to structure, excavation, bedding material, cast·iron frame and cover and all necessary pipe tie·ins for a complete installation, including shop drawings. Heigh of structure from 12 feet to 15 feet.

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Item **12204-293--01-100 -** BASE BID TOTAL: New Manhole **- from 15 feet to 20 feet**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the installation of new precast concrete 4·ft. diameter sanitary sewer manhole, including but not limited to structure, excavation, bedding material, cast·iron frame and cover and all necessary pipe tie·ins for a complete installation, including shop drawings. Heigh of structure from 15 feet to 20 feet.

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Item **12204-293--01-101 -** BASE BID TOTAL: Removal of Manhole **- from 0 feet to 5 feet deep**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the removal of existing manhole (precast or brick). Heigh of structure from 0 feet to 5 feet.

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Item **12204-293--01-102 -** BASE BID TOTAL: Removal of Manhole **- from 5 feet to 8 feet deep**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the removal of existing manhole (precast or brick). Heigh of structure from 5 feet to 8 feet.

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Item **12204-293--01-103 -** BASE BID TOTAL: Removal of Manhole **- from 8 feet to 12 feet deep**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the removal of existing manhole (precast or brick). Heigh of structure from 8 feet to 12 feet.

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Item **12204-293--01-104 -** BASE BID TOTAL: Removal of Manhole **- from 12 feet to 15 feet**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the removal of existing manhole (precast or brick). Heigh of structure from 12 feet to 15 feet.

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Item **12204-293--01-105 -** BASE BID TOTAL: Sewer Manhole Rehabilitation
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the repair and rehabilitation of existing sanitary sewer manholes

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Item **12204-293--01-106 -** BASE BID TOTAL: Removal of Manhole **- from 15 feet to 20 feet**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the removal of existing manhole (precast or brick). Heigh of structure from 15 feet to 20 feet.

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Item **12204-293--01-107 -** BASE BID TOTAL: Replace 24**-inch Manhole Ring and Cover**
Lot Description BASE BID TOTAL

| | |
|---|---|
| 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 all labor, materials, accessories, equipment and tools necessary for the installation of new 24-inch manhole ring and cover

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| | |
|---|---|
| Item | **12204-293--01-108 -** BASE BID TOTAL: Coring |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the coring of existing structure for pipe tie-in, including but not limited to saw-cutting, bricks and mortar, for a complete tie-in.

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| | |
|---|---|
| Item | **12204-293--01-109 -** BASE BID TOTAL: 24**-in x 24-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the installation of new 24-in x 24-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

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| | |
|---|---|
| Item | **12204-293--01-110 -** BASE BID TOTAL: 24**-in x 30-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the installation of new 24-in x 30-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-111 -** BASE BID TOTAL: 24**-in x 36-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 24-in x 36-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-112 -** BASE BID TOTAL: 30**-in x 30-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 30-in x 30-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-113 -** BASE BID TOTAL: 30**-in x 36-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 30-in x 36-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-114 -** BASE BID TOTAL: 30**-in x 48-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 30-in x 48-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-115 -** BASE BID TOTAL: 36**-in x 36-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 36-in x 36-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-116 -** BASE BID TOTAL: 36**-in x 48-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 36-in x 48-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

| | |
|---|---|
| Item | **12204-293--01-117 -** BASE BID TOTAL: 42**-in x 42-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 42-in x 42-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

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| | |
|---|---|
| Item | **12204-293--01-118 -** BASE BID TOTAL: 42**-in x 48-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 42-in x 48-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

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| | |
|---|---|
| Item | **12204-293--01-119 -** BASE BID TOTAL: 48**-in x 48-in - Heavy Duty (H-20 Rated) Hatch including frame and cover** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of new 48-in x 48-inch heavy duty (H-20 Rated) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others.

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| | |
|---|---|
| Item | **12204-293--01-120 -** BASE BID TOTAL: Ductile Iron Pipe Fittings |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 pounds** |

Unit Price

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

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the installation of ductile iron pipe fittings, 350 rating, sizes 4-inch to 24-inch diameter

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Item **12204-293--01-121 -** BASE BID TOTAL: Replace Water Gate Valves, 4**-inch - 8-inch**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing water gate valves 4-inch - 8-inch diameter, including but not limited to riser, excavation, shoring, bedding, fill material, density tests (12 lifts), all depths.

---

Item **12204-293--01-122 -** BASE BID TOTAL: Replace Water Gate Valves, 10**-inch - 12-inch**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing water gate valves 10-inch - 12-inch diameter, including but not limited to riser, excavation, shoring, bedding, fill material, density tests (12 lifts), all depths.

---

Item **12204-293--01-123 -** BASE BID TOTAL: Replace Water Gate Valves, 16**-inch**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing water gate valves 16-inch diameter, including but not limited to riser, excavation, shoring, bedding, fill material, density tests (12 lifts), all depths.

| | |
|---|---|
| Item | **12204-293--01-124 -** BASE BID TOTAL: Air Release Valves **- Water (Installed in manhole)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the replacement of existing air release valve in manhole.

| | |
|---|---|
| Item | **12204-293--01-125 -** BASE BID TOTAL: Air Release Valves **- Water (Installed on aerial crossing)** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the replacement of existing air release valve on aerial crossing.

| | |
|---|---|
| Item | **12204-293--01-126 -** BASE BID TOTAL: Replace Sewer Plug Valves, 4**-inch - 8-inch** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the replacement of existing sewer plug valves 4-inch - 8-inch diameter, including but not limited to riser, excavation, shoring, bedding, fill material, density tests (12 lifts), all depths.

| | |
|---|---|
| Item | **12204-293--01-127 -** BASE BID TOTAL: Replace Sewer Plug Valves, 10**-inch - 12-inch** |
| Lot Description | BASE BID TOTAL |
| 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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing sewer plug valves 10-inch - 12-inch diameter, including but not limited to riser, excavation, shoring, bedding, fill material, density tests (12 lifts), all depths.

---

Item **12204-293--01-128 -** BASE BID TOTAL: Replace Sewer Plug Valves, 16**-inch**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing sewer plug valves 16-inch diameter, including but not limited to riser, excavation, shoring, bedding, fill material, density tests (12 lifts), all depths.

---

Item **12204-293--01-129 -** BASE BID TOTAL: Air Release Valves **- Wastewater (Installed in manhole)**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing air release valve in manhole.

---

Item **12204-293--01-130 -** BASE BID TOTAL: Air Release Valves **- Wastewater (Installed on aerial crossing)**
Lot Description BASE BID TOTAL
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 all labor, materials, accessories, equipment and tools necessary for the replacement of existing air release valve in manhole.

---

Item **12204-293--01-131 -** BASE BID TOTAL: 6**-inch: 6 x 6 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 6-inch X 6-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-132 -** BASE BID TOTAL: 6**-inch: 6 x 4 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 6-inch X 4-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-133 -** BASE BID TOTAL: 8**-inch: 8 x 8 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 8-inch X 8-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-134 -** BASE BID TOTAL: 8**-inch: 8 x 6 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 8-inch X 6-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-135 -** BASE BID TOTAL: 8**-inch: 8 x 4 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 8-inch X 4-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-136 -** BASE BID TOTAL: 10**-inch: 10 x 10 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 10-inch X 10-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-137 -** BASE BID TOTAL: 10**-inch: 10 x 8 Tapping valves and sleeve**
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install 10-inch X 8-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper

restoration.

| | |
|---|---|
| Item | **12204-293--01-138 -** BASE BID TOTAL: 10**-inch: 10 x 6 Tapping valves and sleeve** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all materials, labor and equipment to install 10-inch X 6-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

| | |
|---|---|
| Item | **12204-293--01-139 -** BASE BID TOTAL: 10**-inch: 10 x 4 Tapping valves and sleeve** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all materials, labor and equipment to install 10-inch X 4-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

| | |
|---|---|
| Item | **12204-293--01-140 -** BASE BID TOTAL: 12**-inch: 12 x 12 Tapping valves and sleeve** |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all materials, labor and equipment to install 12-inch X 12-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

| | |
|---|---|
| Item | **12204-293--01-141 -** BASE BID TOTAL: 12**-inch: 12 x 10 Tapping valves and sleeve** |
| Lot Description | BASE BID TOTAL |
| 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 all materials, labor and equipment to install 12-inch X 10-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-142 -** BASE BID TOTAL: 12**-inch: 12 x 8 Tapping valves and sleeve**

Lot Description BASE BID TOTAL

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 all materials, labor and equipment to install 12-inch X 8-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-143 -** BASE BID TOTAL: 12**-inch: 12 x 6 Tapping valves and sleeve**

Lot Description BASE BID TOTAL

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 all materials, labor and equipment to install 12-inch X 6-inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-144 -** BASE BID TOTAL: 12**-inch: 12 x 4 Tapping valves and sleeve**

Lot Description BASE BID TOTAL

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 all materials, labor and equipment to install 12·inch X 4·inch tapping tee including but not limited to, temporary bracing of existing structures, protection of existing utilities, disposal of surplus materials, excavation, backfilling, compaction and proper restoration.

---

Item **12204-293--01-145 -** BASE BID TOTAL: Installation of New Hydrant
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to install the fire hydrant assembly. Fittings, field engineering, testing, surveying and surface restoration shall also be included in the Unit Price.

---

Item **12204-293--01-146 -** BASE BID TOTAL: Replacement of Existing Hydrant
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to replace existing fire hydrant assembly and to remove and properly salvage or dispose of the existing fire hydrants. Fittings, field engineering, testing, surveying and surface restoration shall also be included in the Unit Price.

---

Item **12204-293--01-147 -** BASE BID TOTAL: Relocation of Existing Hydrant
Lot Description BASE BID TOTAL
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 all materials, labor and equipment to relocate existing fire hydrant assembly. Fittings, field engineering, testing, surveying and surface restoration shall also be included in the Unit Price.

---

Item **12204-293--01-148 -** BASE BID TOTAL: Relocation of Existing Hydrant and Replacement with **new hydrant**
Lot Description BASE BID TOTAL

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 all materials, labor and equipment to install a new fire hydrant assembly in a different location and to remove and properly salvage or dispose of the existing fire hydrants. Fittings, field engineering, testing, surveying and surface restoration shall also be included in the Unit Price.

---

Item **12204-293--01-149 -** BASE BID TOTAL: Demucking

Lot Description BASE BID TOTAL

Quantity **1 bank cubic yard**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and disposal of muck, debris, organic, deleterious, or other unsuitable material encountered during excavation. At proposed pipe elevation backfill with suitable gravel/rock (#57 rock) to provide a stable base for the pipe bed. At proposed bottom of structure elevation backfill with clean fill.

---

Item **12204-293--01-150 -** BASE BID TOTAL: Limerock Base

Lot Description BASE BID TOTAL

Quantity **1 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install 12-inch thick limerock base course, including but not limited to density tests (6-inch lifts).

---

Item **12204-293--01-151 -** BASE BID TOTAL: Asphaltic Concrete

Lot Description BASE BID TOTAL

Quantity **1 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301

**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install up to 2-inch thick asphaltic concrete between saw-cut or milled repair area and striping, or as required by the jurisdiction (see details for City and County Requirements).

| | |
|---|---|
| Item | **12204-293--01-152 -** BASE BID TOTAL: Milling and Paving |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 square yard** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to mill and pave existing asphalt pavement to a depth of up to 2-inch including striping, or as required by the jurisdiction (see details for City and County Requirements).

| | |
|---|---|
| Item | **12204-293--01-153 -** BASE BID TOTAL: MOT Residential Roads |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Provide traffic control and detour barricades,flagger, flashing arrow, temporary signage on local residential roads; including obtaining MOT Permit with the City of Fort Lauderdale, plans to be certified by ATSSA certified technician and in accordance with Chapter 6 of the MUTCD.

| | |
|---|---|
| Item | **12204-293--01-154 -** BASE BID TOTAL: MOT State or County Roads |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Provide traffic control and detour barricades,flagger, flashing arrow, temporary signage on state/county roads; including obtaining MOT Permit with the City of Fort Lauderdale, plans to be certified by ATSSA certified technician and in accordance with Chapter 6 of the MUTCD.

Item **12204-293--01-155 -** BASE BID TOTAL: SOD **- St. Augustine**

Lot Description BASE BID TOTAL

Quantity **1 square foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install St. Augustine sod, including 2-inch topsoil.

---

Item **12204-293--01-156 -** BASE BID TOTAL: SOD **- Argentine Bahia**

Lot Description BASE BID TOTAL

Quantity **1 square foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install Argentine Bahia sod, including 2-inch topsoil.

---

Item **12204-293--01-157 -** BASE BID TOTAL: Sheet Piling

Lot Description BASE BID TOTAL

Quantity **1 square foot**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to properly install, and extract, steel sheet piling (Z piles), shoring and bracing, and all work necessary for a complete installation and removal of sheet piling system.

---

Item **12204-293--01-158 -** BASE BID TOTAL: Flowable Fill

Lot Description BASE BID TOTAL

Quantity **1 cubic yard**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to install flowable fill, excavatable type, 100 PSI max, 28 days

compressive strength.

| | |
|---|---|
| Item | **12204-293--01-159 -** BASE BID TOTAL: Steel Plates |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 each** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish and install temporary traffic bearing steel plates, 1in. x 10ft. X 20ft. When required, include asphalt transitions to secure plates in place, remove and haul away upon completion.

| | |
|---|---|
| Item | **12204-293--01-160 -** BASE BID TOTAL: Concrete Sidewalk Replacement |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 square yard** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and reinstallation of concrete sidewalk, as per City/County Standard Detail.

| | |
|---|---|
| Item | **12204-293--01-161 -** BASE BID TOTAL: Concrete Curb and Gutter Replacement |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 linear foot** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale**<br>See ITB Specifications<br>See ITB Specifications<br>Fort Lauderdale FL 33301<br>**Qty** 1 |

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and reinstallation of concrete curb and gutter, as per City/County Standard Details.

| | |
|---|---|
| Item | **12204-293--01-162 -** BASE BID TOTAL: Asphalt Driveway Replacement |
| Lot Description | BASE BID TOTAL |
| Quantity | **1 square yard** |
| Unit Price | |
| Delivery Location | **City of Fort Lauderdale** |

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and reinstallation of asphalted driveway.

---

Item **12204-293--01-163 -** BASE BID TOTAL: Concrete Driveway Replacement
Lot Description BASE BID TOTAL
Quantity **1 square yard**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and reinstallation of concrete driveway.

---

Item **12204-293--01-164 -** BASE BID TOTAL: Pavers Driveway Replacement
Lot Description BASE BID TOTAL
Quantity **1 square yard**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and reinstallation of pavers driveway.

---

Item **12204-293--01-165 -** BASE BID TOTAL: Brick Roadways or Crosswalk Replacement
Lot Description BASE BID TOTAL
Quantity **1 square yard**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary for the removal and reinstallation of brick roadways and crosswalks.

---

Item **12204-293--01-166 -** BASE BID TOTAL: Replace Concrete Slabs and/or Aprons
Lot Description BASE BID TOTAL

Quantity **1 square yard**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Furnish all labor, materials, accessories, equipment and tools necessary to replace concrete slabs or aprons.

---

Item **12204-293--01-167** - BASE BID TOTAL: Testing Laboratory **- Densities**

Lot Description BASE BID TOTAL

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Provide testing laboratory for soil densities, as required by the State/County/City.

---

Item **12204-293--01-168** - BASE BID TOTAL: Testing Laboratory **- Concrete Testing**

Lot Description BASE BID TOTAL

Quantity **1 each**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Provide testing laboratory for concrete compressive strength and slump tests, as required by the State/County/City.

---

Item **12204-293--01-169** - BASE BID TOTAL: Labor **- Foreman**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Foreman. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-170** - BASE BID TOTAL: Labor **- Pipe Layer (Lead)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Pipe Layer (Lead). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-171** - BASE BID TOTAL: Labor **- Pipe Layer (Tail)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Pipe Layer (Tail). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-172** - BASE BID TOTAL: Labor **- Laborer**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Laborer. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-173** - BASE BID TOTAL: Equipment **- Excavator (Heavy Duty)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**

Excavator (Heavy Duty, CAT 330 or equal). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-174 -** BASE BID TOTAL: Equipment **- Excavator (Medium Duty)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Excavator (Medium Duty, CAT 335 or equal). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-175 -** BASE BID TOTAL: Equipment **- Excavator (Small)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Excavator (Small, CAT mini-excavator or equal). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-176 -** BASE BID TOTAL: Equipment **- Loader (Heavy Duty)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Loader (Heavy Duty, CAT 950 or equal). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-177 -** BASE BID TOTAL: Equipment **- Loader (Medium Duty)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications

Fort Lauderdale FL 33301
**Qty** 1

**Description**
Loader (Medium Duty, CAT 928 or equal). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-178** - BASE BID TOTAL: Equipment - **Loader (Small)**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Loader (Small, CAT 259 or equal). Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-179** - BASE BID TOTAL: Equipment - **Combination Backhoe/Front End Loader**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Combination Backhoe/Front End Loader. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-180** - BASE BID TOTAL: Equipment - **Vibratory Compactor**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Vibratory Compactor, 5 ton. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-181** - BASE BID TOTAL: Equipment - **Asphalt Roller**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price

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

**Description**
Asphalt Roller, 5-8 Ton. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-182 -** BASE BID TOTAL: Equipment **- Vibratory Plate Compactor**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Vibratory Plate Compactor. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-183 -** BASE BID TOTAL: Equipment **- Road Grader**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Road Grader. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-184 -** BASE BID TOTAL: Equipment **- Low Boy 50-T**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Low Boy 50-T. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-185 -** BASE BID TOTAL: Equipment **- Flatbed Truck**
Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Flatbed Truck, under 25,000 lbs. GVW. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-186 -** BASE BID TOTAL: Equipment **- Paver**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Paver, Road Class 8ft. - 12ft. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-187 -** BASE BID TOTAL: Equipment **- Trench Box, 6ft.x16ft.**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Trench Box, 6ft. X 16ft. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-188 -** BASE BID TOTAL: Equipment **- Trench Box, 8ft.x20ft.**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Trench Box, 8ft.x 20ft. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-189 -** BASE BID TOTAL: Equipment **- Trench Box, 8ft.x24ft.**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Trench Box, 8ft.x 24ft. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-190 -** BASE BID TOTAL: Equipment **- Sediment Box, 7,000 gal**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Sediment Box, 7,000 Gal. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-191 -** BASE BID TOTAL: Equipment **- Sediment Box, 9,000 gal**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Sediment Box, 9,000 Gal. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-192 -** BASE BID TOTAL: Equipment **- Pump, 8-inch.**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**

Pump, 8-inch Submersible 400 ft. discharge hose. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-193** - BASE BID TOTAL: Equipment - **Pump, 6-inch.**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Pump, 6-inch Submersible 400 ft. discharge hose. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-194** - BASE BID TOTAL: Equipment - **Pump, 4-inch.**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Pump, 4-inch Submersible 400 ft. discharge hose. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-195** - BASE BID TOTAL: Equipment - **Pump, 3-inch.**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Pump, 3-inch Submersible 400 ft. discharge hose. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-196** - BASE BID TOTAL: Equipment - **Pump, 2-inch.**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

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

**Description**
Pump, 2-inch Submersible 400 ft. discharge hose. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-197 -** BASE BID TOTAL: Equipment **- Dump Truck, Single Axle**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Dump Truck Single Axle. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-198 -** BASE BID TOTAL: Equipment **- Dump Truck, Double Axle**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Dump Truck Double Axle. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-199 -** BASE BID TOTAL: Equipment **- Cut off Saw**
Lot Description BASE BID TOTAL
Quantity **1 hour**
Unit Price
Delivery Location **City of Fort Lauderdale**
See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Cut off saw. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-200 -** BASE BID TOTAL: Equipment **- Hydraulic Concrete Chain Saw**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Hydraulic concrete chain saw. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-201 -** BASE BID TOTAL: Equipment **- Small Tools**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Small Tools. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

---

Item **12204-293--01-202 -** BASE BID TOTAL: Equipment **- Turbidity Screen/Barrier**

Lot Description BASE BID TOTAL

Quantity **1 hour**

Unit Price

Delivery Location **City of Fort Lauderdale**

See ITB Specifications
See ITB Specifications
Fort Lauderdale FL 33301
**Qty** 1

**Description**
Turbidity Screen/Barrier. Time-and-Material Items shall only be used for Work Not coverered by other pay items.

# *CITY OF FORT LAUDERDALE*
# *CONTRACT AND SPECIFICATIONS PACKAGE*

## BID NO. 12204-293

## PROJECT NO. 12448

# Annual Sewer Repairs and Replacement Contract

**HERBERT STANLEY**
**PROJECT MANAGER II**

**JAMES HEMPHILL**
**ASST. MANAGER OF PROCUREMENT AND CONTRACTS**
**Telephone: (954) 828-5143 E-mail: Jhemphill@fortlauderdale.gov**

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**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/certification**

CITB Prime Contractor ID
CITB Questionnaire Sheets
CITB Trench Safety
CITB Local Business Price Preference Certification
CITB Non-Collusion Statement
Non-Discrimination Certification
Contract Payment Method
CITB Construction Bid Certification

# INVITATION TO BID

Sealed bids will be received electronically until 2:00 p.m., local time, on **MONDAY, JULY 1, 2019,** and opened immediately thereafter in the 5th Floor Conference Room, City Hall, City of Fort Lauderdale, Florida, 100 North Andrews Avenue, Fort Lauderdale, Florida, 33301, for **BID NO., 12204-193, PROJECT NO.,12448 Annual Sewer Repairs and Replacement Contract.**

This project is located City-wide, in the City of Fort Lauderdale. The work to be accomplished under this contract includes, but is not limited to, rehabilitation of 8 inch through 36 inch mainline sanitary sewers and water mains. Point repairs of mainlines and laterals. Manhole repairs, testing and sealing of pipe joints, flow bypass, and related activities required to provide a complete and functional rehabilitation of the mainline wastewater collection system and water distribution system

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

**Licensing Requirements:** Contractor must possess a certified general contractor license OR a certified underground utility and excavation contractor license issued by the Florida Department of Business and Professional Regulation. Contractor must have proper licensing prior to submitting bid and must submit evidence of same with bid.

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:

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) 828-5233.

# 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.

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

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 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 follow the protest procedure as found in the city's procurement ordinance within five (5) days after a notice of intent to award is posted on the city's web site at the following link: http://www.fortlauderdale.gov/departments/finance/procurement-services/notices-of-intent-to-award.
The complete protest ordinance may be found on the city's web site at the following link: https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH2AD_ARTVFI_DIV2PR_S2-182DIREPR

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.

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 (2018), 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.

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.

EARLY PROJECT COMPLETION INCENTIVE
The City reserves the right to or not to negotiate an incentive program with the awarded vendor for timely completion. The City is under no obligation to offer such an incentive.

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.

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. The ordinance may also be viewed on the City's website at http://www.fortlauderdale.gov/clerk/LobbyistDocs/lobbyist_ordinance.pdf

# 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, 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, 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 **JAMES HEMPHILL**, Asst.. Manager of Procurement and Contracts at (954) 828-5143 or email at jhemphill@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 the 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 Work Order shall commence immediately upon the Contractor's receipt of an authorized Work Order.

5.3 The Contractor shall mobilize to the project site and begin construction activities within the calendar days of receipt of the authorized Work Order or by the specific date noted within the Work Order (whichever applies).

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

5.5 The Work on each Work 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 authorized Work 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 eighty (180) 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.

**5.7** The termination date for issuance of Work Orders shall be when the funds are depleted or Two (2) years from effective date of the agreement, whichever comes first. All work orders issued before the contract termination must be completed under this contract even if contract has expired.

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.

Contractor must possess a certified general contractor license OR a certified underground utility and excavation contractor license issued by the Florida Department of Business and Professional Regulation. Contractor must have proper licensing prior to submitting bid and must submit evidence of same with bid

***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.

The Contractor and/or Subcontractor shall each have a minimum of 5-years' experience repairing/replacing water, wastewater or reclaimed water pressure/gravity pipelines of the same size diameter or larger, including the same minimum linear footage as the project, or greater linear footage using open cut methodology, including mainlines, lateral connections, stack singles or double wye lateral installations.

The contractor must submit a minimum of three (3) specific municipal project references for the same size diameter or larger diameter utility (water, wastewater, or reclaimed water) which have been completed in the last 5 years. Successful installation is required as well as good references for consideration of performing this project. In addition, the referenced employees as submitted by the contractor are required to be on site through the project construction

**NOTE: REFERENCES SHALL NOT INCLUDE ONLY CITY OF FORT LAUDERDALE EMPLOYEES OR WORK PERFORMED FOR THE CITY. THE CITY IS ALSO INTERESTED IN WORK EXPERIENCE AND REFERENCES FROM ENTITIES 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 | $ |
|---|---|
| Additional Material Allowance | $15,000 |
| Maintenance of Traffic Allowance | $25,000 |

| | |
|---|---|
| Restoration Allowance | $10,000 |
| Bond Allowance for Broward County Projects | $20,000 |
| Storm Drainage Repairs Allowances | $20,000 |
| **TOTAL** | **$90,000** |

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

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

10.1 As a condition precedent to the effectiveness of this Agreement, during the term of this Agreement and during any renewal or extension term of this Agreement, the Contractor, at the Contractor's sole expense, shall provide insurance of such types and with such terms and limits as noted below. Providing proof of and maintaining adequate insurance coverage are material obligations of the Contractor. The Contractor shall provide the City a certificate of insurance evidencing such coverage. The Contractor's insurance coverage shall be primary insurance for all applicable policies. The limits of coverage under each policy maintained by the Contractor shall not be interpreted as limiting the Contractor's liability and obligations under this Agreement. All insurance policies shall be from insurers authorized to write insurance policies in the State of Florida and that possess an A.M. Best rating of A-, VII or better. All insurance policies are subject to approval by the City's Risk Manager.

The coverages, limits, and endorsements required herein protect the interests of the City, and these coverages, limits, and endorsements may not be relied upon by the Contractor for assessing the extent or determining appropriate types and limits of coverage to protect the Contractor against any loss exposure, whether as a result of this Agreement or otherwise. The requirements contained herein, as well as the City's review or acknowledgement, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor under this Agreement.

The following insurance policies and coverages are required:

10.1.1 Commercial General Liability
Coverage must be afforded under a Commercial General Liability policy with limits not less than:

- $1,000,000 each occurrence and $2,000,000 aggregate for Bodily Injury, Property Damage, and Personal and Advertising Injury
- $1,000,000 each occurrence and $2,000,000 aggregate for Products and Completed Operations

Policy must include coverage for Contractual Liability and Independent Contractors.

The City and the City's officers, employees, and volunteers are to be covered as additional insureds with a CG 20 26 04 13 Additional Insured – Designated Person or Organization Endorsement or similar endorsement providing equal or broader Additional Insured Coverage

with respect to liability arising out of activities performed by or on behalf of the Contractor. The coverage shall contain no special limitation on the scope of protection afforded to the City or the City's officers, employees, and volunteers.

10.1.2 Business Automobile Liability

Coverage must be afforded for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than $1,000,000 combined single limit each accident.

If the Contractor does not own vehicles, the Contractor shall maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

10.1.3 Workers' Compensation and Employer's Liability

Coverage must be afforded per Chapter 440, Florida Statutes. Any person or entity performing work for or on behalf of the City must provide Workers' Compensation insurance. Exceptions and exemptions will be allowed by the City's Risk Manager, if they are in accordance with Florida Statute.

The Contractor waives, and the Contractor shall ensure that the Contractor's insurance carrier waives, all subrogation rights against the City and the City's officers, employees, and volunteers for all losses or damages. The City requires the policy to be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or equivalent.

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

Insurance Certificate Requirements

a. The Contractor shall provide the City with valid Certificates of Insurance (binders are unacceptable) no later than thirty (30) days prior to the start of work contemplated in this Agreement.
b. The Contractor shall provide to the City a Certificate of Insurance having a thirty (30) day notice of cancellation; ten (10) days' notice if cancellation is for nonpayment of premium.
c. In the event that the insurer is unable to accommodate the cancellation notice requirement, 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 certificate holder.
d. In the event the Agreement term goes beyond the expiration date of the insurance policy, the Contractor shall provide the City with an updated Certificate of Insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The City reserves the right to suspend the Agreement until this requirement is met.
e. The Certificate of Insurance shall indicate whether coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.
f. The City shall be named as an Additional Insured on all liability policies, with the exception of Workers' Compensation.

g. The City shall be granted a Waiver of Subrogation on the Contractor's Workers' Compensation insurance policy.
h. The title of the Agreement, Bid/Contract number, event dates, or other identifying reference must be listed on the Certificate of Insurance.

The Certificate Holder should read as follows:
City of Fort Lauderdale
100 N. Andrews Avenue
Fort Lauderdale, FL 33301

The Contractor has the sole responsibility for the payment of all insurance premiums and shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, co-insurance penalty, or self-insured retention; including any loss not covered because of the operation of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation. Any costs for adding the City as an Additional Insured shall be at the Contractor's expense.

If the Contractor's primary insurance policy/policies do not meet the minimum requirements, as set forth in this Agreement, the Contractor may provide evidence of an Umbrella/Excess insurance policy to comply with this requirement.

The Contractor's insurance coverage shall be primary insurance as applied to the City and the City's officers, employees, and volunteers. Any insurance or self-insurance maintained by the City covering the City, the City's officers, employees, or volunteers shall be non-contributory.

Any exclusion or provision in the insurance maintained by the Contractor that excludes coverage for work contemplated in this Agreement shall be unacceptable and shall be considered breach of contract.

All required insurance policies must be maintained until the contract work has been accepted by the City, or until this Agreement is terminated, whichever is later. Any lapse in coverage shall be considered breach of contract. In addition, Contractor must provide to the City confirmation of coverage renewal via an updated certificate should any policies expire prior to the expiration of this Agreement. The City reserves the right to review, at any time, coverage forms and limits of Contractor's insurance policies.

The Contractor shall provide notice of any and all claims, accidents, and any other occurrences associated with this Agreement shall be provided to the Contractor's insurance company or companies and the City's Risk Management office as soon as practical.

It is the Contractor's responsibility to ensure that any and all of the Contractor's independent contractors and subcontractors comply with these insurance requirements. All coverages for independent contractors and subcontractors shall be subject to all of the applicable requirements stated herein. Any and all deficiencies are the responsibility of the Contractor.

10.1.4 ADDITIONAL COVERAGES (for specialty contracts as determined by Risk Management)

10.1.4.1 Property Coverage (Builder's Risk)

Coverage must be afforded in an amount not less than 100% of the total project cost, including soft costs, with a deductible of no more than $25,000 each claim. Coverage form shall include, but not be limited to:

- All Risk Coverage including Flood and Windstorm with no coinsurance clause
- Guaranteed policy extension provision
- Waiver of Occupancy Clause Endorsement, which will enable the City to occupy the facility under construction/renovation during the activity
- Storage and transport of materials, equipment, supplies of any kind whatsoever to be used on or incidental to the project
- Equipment Breakdown for cold testing of all mechanized, pressurized, or electrical equipment

This policy shall insure the interests of the owner, contractor, and subcontractors in the property against all risk of physical loss and damage, and name the City as a loss payee. This insurance shall remain in effect until the work is completed and the property has been accepted by the City.

**11. PERFORMANCE AND PAYMENT BOND**: 100% for each Work Order total

**Number of awards anticipated:** The City may award up to five (5) Contracts to responsive and responsible contractors providing the lowest bid amounts in sequential order. The selected contractors will receive Work Orders during the effective term of the contract. Each Work Order shall require Surety bonds equal to 100% of the Work Order total. (See complete Performance bond requirements under Article 10 of the Sample Agreement.

**12. CITY PROJECT MANAGER**

The Project Manager is hereby designated by the City as **Herbert Stanley**, whose address is **949 NW 38 Street, Fort Lauderdale, FL 33309**, telephone number: **(954) 828-6801**, and email address is **hstanley@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 authorized order within the agreed upon and approved time for said Work Order, the Contractor shall pay to the City the sum of **Three Hundred Dollars ($300.00)** for each and every calendar day that the completion of the Work Order is delayed beyond the time agreed upon for said Work 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 shall make payment to the Contractor through utilization of the City's P-Card Program. 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. All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. 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: $100/Hr.**

# 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 Number, _____, 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.

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.

SAMPLE CONSTRUCTION AGREEMENT

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.

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, 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.

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 – An adjective which 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 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.

SAMPLE CONSTRUCTION AGREEMENT

1.15 Effective Date of the Agreement – The effective date of the agreement shall be the date the City Commission approves the work. 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 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 will constitute non-performance of the Contractor and would be ground for termination of the contract per ARTICLE 17 of the Agreement.

1.16 Final Completion Date – The date the 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.

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.

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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.

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 are referred to in the Contract Documents.

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.

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. The Project Manager, or designee, shall be the authorized agent for the City unless otherwise specified.

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 will be signed and sealed by the Engineer of Record or a Professional Land Surveyor licensed in the State of Florida.

1.31 Substantially Completed Date – A date when the Contractor has requested in writing, stating that the Work is substantially completed and is ready for an inspection and issuance of a final punch list for the Project.

1.32 Work – The entire completed delivered product or the various separately identifiable parts thereof required to be furnished under the Contract Documents. 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

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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:

**ANNUAL SEWER REPAIRS AND REPLACEMENT CONTRACT**
ITB #12204-293 PROJECT #12448

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 City-wide, in the City of Fort Lauderdale. The work to be accomplished under this contract includes, but is not limited to, rehabilitation of 8 inch through 36 inch mainline sanitary sewers and water mains. Point repairs of mainlines and laterals. Manhole repairs, testing and sealing of pipe joints, flow bypass, and related activities required to provide a complete and functional rehabilitation of the mainline wastewater collection system and water distribution system.

2.3 Within ten (10) days of the execution of this Agreement, the Contractor shall submit a Construction Schedule, Schedule of Values and a listing of those 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 operations.

## ARTICLE 3 – PROJECT MANAGER

3.1 The Project Manager is hereby designated by the City as Herbert Stanley, whose address is 949 NW 38th Street, Fort Lauderdale, FL 33309, telephone number: (954) 828-6801, and email address is hstanley@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 The Contract Documents may only be altered, amended, or repealed in accordance with the specific provisions of the terms of this Agreement.

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

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

4.5 Notice of Award and Notice to Proceed.

SAMPLE CONSTRUCTION AGREEMENT

4.6 General Conditions as amended by the Special Conditions.

4.7 Technical Specifications.

4.8 Plans/Drawings.

4.9 Addenda number _____ through _____, inclusive.

4.10 Bid Form and supplement Affidavits and Agreements.

4.11 All applicable provisions of State and Federal Law.

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

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

4.14 Schedule of Completion and Schedule of Values.

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

4.16 Any additional documents that are required to be submitted under the Agreement.

4.17 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 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 _____.

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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, at once and before proceeding with the Work affected shall obtain a written interpretation or clarification from the City.

It is the intent of the specifications and plans to describe a complete Project to be constructed in accordance with the Contract Documents. 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.

## ARTICLE 5 – CONTRACT TIME

The initial contract term shall commence upon the 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 Work Order shall commence immediately upon the Contractor's receipt of an authorized Work Order.

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

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

5.5 The Work on each Work 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 authorized Work 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

SAMPLE CONSTRUCTION AGREEMENT

hundred and eighty (180) 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.

5.7 The termination date for issuance of Work Orders shall be when the funds are depleted or Two (2) years from effective date of the agreement, whichever comes first. All work orders issued before the contract termination must be completed under this contract even if contract has expired.

## ARTICLE 6 – CONTRACT PRICE

6.1 City shall pay Contractor for performance of the Work in accordance with Article 7, subject to additions and deletions by Change Order, as provided for in this Agreement.

6.2 The parties expressly agree that the Contract Price, which shall not exceed the amount of $_____, constitutes the total maximum compensation payable to Contractor for performing the Work, plus any Work done pursuant to a Change Order. The Contract Price is in accordance with the line item unit prices listed in the Bid. Line items are based on a unit price cost multiplied by a defined quantity. Anyadditional duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change to the Contract Price.

6.3 The Contract Price constitutes the compensation payable to Contractor for performing the Work plus any Work done pursuant to a Change Order. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract price.

## ARTICLE 7 – PAYMENT

7.1 Contractor shall submit Applications for Payment in accordance with the Contract Documents. Applications for Payment will be processed by City as provided 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 monthly Applications 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. All progress payments will be made on the basis of the progress of the Work completed.

7.3 Prior to Final Completion, 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 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. However, not less than ten percent (10%) of the Contract Price shall be retained until Record Drawings (as-builts), specifications, addenda, modifications and

SAMPLE CONSTRUCTION AGREEMENT

shop drawings, including all manufacturers' instructional and parts manuals are delivered to and accepted by the City.

7.5 City may withhold, in whole or in part, payment to such extent as may be necessary to protect itself from loss on account of:

7.5.1 Defective work not remedied.
7.5.2 Claims filed or reasonable evidence indicating probable filing of claims by other parties against Contractor or City because of Contractor's performance.
7.5.3 Failure of Contractor to make payments properly to Subcontractors or for material or labor.
7.5.4 Damage to another contractor not remedied.
7.5.5 Liquidated damages and costs incurred by Consultant for extended construction administration, if applicable.
7.5.6 Failure of Contractor to provide any and all documents required by the Contract Documents.

When the above grounds are removed or resolved satisfactory to the Project Manager, payment shall be made in whole or in part.

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

7.7 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 utilizing both VISA and MASTERCARD networks. 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 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.

## ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

In order to induce the City to enter into this Agreement, 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, 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 Proposed Price and that the project can be completed for the Proposed Price submitted within the Contract Time as defined in this Agreement. Furthermore, Contractor warrants and confirms that he is totally familiar with,

SAMPLE CONSTRUCTION AGREEMENT

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 the Contract Documents, 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 Work and all other matters which can in any way affect the Work or the cost thereof under the 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 finds and has further 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.

8.5 Contractor has made or caused 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 he deems necessary for the performance of the Work at the Contract Prices, within the Contract Time 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 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 and the written resolution by City is acceptable to the Contractor.

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. 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.

8.8.3 The Contractor shall designate the superintendent on the job to the City, in writing, immediately after receipt of the Notice to Proceed. The Contractor understands and agrees that the superintendent's physical presence on the job

SAMPLE CONSTRUCTION AGREEMENT

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 The Contractor shall assign personnel to the job site that have successfully completed training programs related to trench safety, confined space and maintenance of traffic. A certified "competent person" shall be assigned to the job site. Personnel certified by the International Municipal Signal Associations with Florida Department of Transportation qualifications are required relative to maintenance of traffic. Failure to pursue the Work with the properly certified supervisory staff may result in notice to stop work or terminate 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

8.9.2 All material 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. 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 a.m. to 4:30 p.m. 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

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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 at variance therewith, the Contractor shall give the Project Manager prompt written notice thereof, and any necessary changes shall be adjusted by any appropriate modifications. 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 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 his 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 do 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

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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 required herein that may be destroyed or damaged.

During the progress of the work, the Contractor shall keep the premises free from accumulations 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.

8.17 Notice to affected property owners as may be directed by the Project Manager.Project Record Documents and Final 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 the City with a minimum of three (3) sets of signed and sealed record drawings (Final As-Builts) and a CD of the electronic drawings 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.

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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.

8.21 Environmental: The Contractor has fully inspected the Premises and agrees, except as to the presence of any asbestos, to accept the Premises in an "as is" physical condition, without representation or warranty by the City of any kind, including, without limitation, any and all existing environmental claims or obligations that may arise from the presence of any "contamination" on, in or about the Premises. Further, Contractor and all entitles claiming by, through or under the Contractor, releases and discharges the City, from any claim, demand, or cause of action arising out of or relating to the Contractor's use, handling, storage, release, discharge, treatment, removal, transport, decontamination, cleanup, disposal and/or presence of any hazardous substances including asbestos on, under, from or about the Premises. The Contractor shall have no liability for any pre-existing claims or "contamination" on the Premises.

The Contractor shall not use, handle, store, discharge, treat, remove, transport, or dispose of Hazardous Substances including asbestos at, in, upon, under, to or from the Premises until receipt of instructions from the City. At such time, a City approved Change Order, which shall not include any profit, shall authorize the Contractor to perform such services.

The Contractor shall immediately deliver to the Project Manager complete copies of all notices, demands, or other communications received by the Contractor from any governmental or quasi-governmental authority or any insurance company or board of fire underwriters or like or similar entities regarding in any way alleged violations or potential violations of any Environmental Law or otherwise asserting the existence or

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potential existence of any condition or activity on the Premises which is or could be dangerous to life, limb, property, or the environment.

For other and additional consideration, the Contractor hereby agrees, at its sole cost and expense, to indemnify and protect, defend, and hold harmless the City and its respective employees, agents, officials, officers, representatives, contractors and subcontractors, successors, and assigns (hereafter the "City") from and against any and all claims, demands, losses, damages, costs, expenses, including but not limited to mitigation, restoration, and natural restoration expenses, liabilities, assessments, fines, penalties charges, administrative and judicial proceedings and orders, judgments, causes of action, in law or in equity, remedial action requirements and/or enforcement actions of any kind (including, without limitation, attorneys' fees and costs) directly or indirectly arising out of or attributable to, in whole or in part, the Contractor's use, handling, storage, release, threatened release, discharge, treatment, removal, transport, decontamination, cleanup, disposal and/or presence of a Hazardous Substance (excluding asbestos) on, under, from, to or about the Premises or any other activity carried on or undertaken on or off the Premises by the Contractor or its employees, agents or subcontractors, in connection with the use, handling, storage, release, threatened release, discharge, treatment, mitigation, natural resource restoration, removal, transport, decontamination, cleanup, disposal and/or presence or any Hazardous Substance including asbestos located, transported, or present on, undue, from, to, or about the Premises. This indemnity is intended to be operable under 42 U.S.C. sections 9607, as amended, and any successor section.

The scope of the indemnity obligations includes, but is not limited to: (a) all consequential damages; (b) the cost of any required or necessary repair, cleanup, or detoxification of the applicable real estate and the preparation and implementation of any closure, remedial or other required plan, including without limitation; (i) the costs of removal or remedial action incurred by the United States government or the State of Florida or response costs incurred by any other person, or damages from injury to destruction of, or loss of, natural resources, including the cost of assessing such injury, destruction, or loss, incurred pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, as amended; (ii) the clean-up costs, fines, damages, or penalties incurred pursuant to any applicable provisions of Florida law; and (iii) the cost and expenses of abatement, correction or cleanup, fines, damages, response costs, or penalties which arise from the provisions of any other statute, law, regulation, code ordinance, or legal requirement state or federal; and (c) liability for personal injury or property damage arising under any statutory or common law tort theory, including damages assessed for the maintenance of a public private nuisance, response costs, or for the carrying on of an abnormally dangerous activity.

8.22 No Extended Damages: 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

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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.

8.23 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.

8.24 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 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 he is shut down for implementation of the preparedness plan, the duration of the storm and a reasonable period to restore the Premises.

8.25 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

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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.

8.26 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 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 *et eq.*).

Additionally, the contractor assures that they, the sub recipient or the subcontractor 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

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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.

## ARTICLE 10 – BONDS AND INSURANCE

10.1 Public Construction and Other Bonds: The Contractor shall furnish Public Construction or Performance and Payment Bonds ("Bond"), each in an amount at least equal to the Contract Price 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.

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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 As a condition precedent to the effectiveness of this Agreement, during the term of this Agreement and during any renewal or extension term of this Agreement, the Contractor, at the Contractor's sole expense, shall provide insurance of such types and with such terms and limits as noted below. Providing proof of and maintaining adequate insurance coverage are material obligations of the Contractor. The Contractor shall provide the City a certificate of insurance evidencing such coverage. The Contractor's insurance coverage shall be primary insurance for all applicable policies. The limits of coverage under each policy maintained by the Contractor shall not be interpreted as limiting the Contractor's liability and obligations under this Agreement. All insurance policies shall be from insurers authorized to write insurance policies in the State of Florida and that possess an A.M. Best rating of A-, VII or better. All insurance policies are subject to approval by the City's Risk Manager.

The coverages, limits, and endorsements required herein protect the interests of the City, and these coverages, limits, and endorsements may not be relied upon by the Contractor for assessing the extent or determining appropriate types and limits of coverage to protect the Contractor against any loss exposure, whether as a result of this Agreement or otherwise. The requirements contained herein, as well as the City's review or acknowledgement, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor under this Agreement.

The following insurance policies and coverages are required:

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10.3.2 Commercial General Liability

Coverage must be afforded under a Commercial General Liability policy with limits not less than:

- $1,000,000 each occurrence and $2,000,000 aggregate for Bodily Injury, Property Damage, and Personal and Advertising Injury
- $1,000,000 each occurrence and $2,000,000 aggregate for Products and Completed Operations

Policy must include coverage for Contractual Liability and Independent Contractors.

The City and the City's officers, employees, and volunteers are to be covered as additional insureds with a CG 20 26 04 13 Additional Insured – Designated Person or Organization Endorsement or similar endorsement providing equal or broader Additional Insured Coverage with respect to liability arising out of activities performed by or on behalf of the Contractor. The coverage shall contain no special limitation on the scope of protection afforded to the City or the City's officers, employees, and volunteers.

10.3.3 Business Automobile Liability

Coverage must be afforded for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than $1,000,000 combined single limit each accident.

If the Contractor does not own vehicles, the Contractor shall maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

10.3.4 Workers' Compensation and Employer's Liability

Coverage must be afforded per Chapter 440, Florida Statutes. Any person or entity performing work for or on behalf of the City must provide Workers' Compensation insurance. Exceptions and exemptions will be allowed by the City's Risk Manager, if they are in accordance with Florida Statute.

The Contractor waives, and the Contractor shall ensure that the Contractor's insurance carrier waives, all subrogation rights against the City and the City's officers, employees, and volunteers for all losses or damages. The City requires the policy to be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or equivalent.

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

Insurance Certificate Requirements

a. The Contractor shall provide the City with valid Certificates of Insurance (binders are unacceptable) no later than thirty (30) days prior to the start of work contemplated in this Agreement.
b. The Contractor shall provide to the City a Certificate of Insurance having a thirty (30) day notice of cancellation; ten (10) days' notice if cancellation is for nonpayment of premium.

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c. In the event that the insurer is unable to accommodate the cancellation notice requirement, 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 certificate holder.
d. In the event the Agreement term goes beyond the expiration date of the insurance policy, the Contractor shall provide the City with an updated Certificate of Insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The City reserves the right to suspend the Agreement until this requirement is met.
e. The Certificate of Insurance shall indicate whether coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.
f. The City shall be named as an Additional Insured on all liability policies, with the exception of Workers' Compensation.
g. The City shall be granted a Waiver of Subrogation on the Contractor's Workers' Compensation insurance policy.
h. The title of the Agreement, Bid/Contract number, event dates, or other identifying reference must be listed on the Certificate of Insurance.

The Certificate Holder should read as follows:
City of Fort Lauderdale
100 N. Andrews Avenue
Fort Lauderdale, FL 33301

The Contractor has the sole responsibility for the payment of all insurance premiums and shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, co-insurance penalty, or self-insured retention; including any loss not covered because of the operation of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation. Any costs for adding the City as an Additional Insured shall be at the Contractor's expense.

If the Contractor's primary insurance policy/policies do not meet the minimum requirements, as set forth in this Agreement, the Contractor may provide evidence of an Umbrella/Excess insurance policy to comply with this requirement.
The Contractor's insurance coverage shall be primary insurance as applied to the City and the City's officers, employees, and volunteers. Any insurance or self-insurance maintained by the City covering the City, the City's officers, employees, or volunteers shall be non-contributory.

Any exclusion or provision in the insurance maintained by the Contractor that excludes coverage for work contemplated in this Agreement shall be unacceptable and shall be considered breach of contract.

All required insurance policies must be maintained until the contract work has been accepted by the City, or until this Agreement is terminated, whichever is later. Any lapse in coverage shall be considered breach of contract. In addition, Contractor must provide to the City confirmation of coverage renewal via an updated certificate should any policies expire prior to the expiration of this Agreement. The City reserves the right to review, at any time, coverage forms and limits of Contractor's insurance policies.

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The Contractor shall provide notice of any and all claims, accidents, and any other occurrences associated with this Agreement shall be provided to the Contractor's insurance company or companies and the City's Risk Management office as soon as practical.

It is the Contractor's responsibility to ensure that any and all of the Contractor's independent contractors and subcontractors comply with these insurance requirements. All coverages for independent contractors and subcontractors shall be subject to all of the applicable requirements stated herein. Any and all deficiencies are the responsibility of the Contractor.

10.3.5 OPTIONAL COVERAGES (for specialty contracts as determined by Risk Management)

10.3.5.1 Property Coverage (Builder's Risk)

Coverage must be afforded in an amount not less than 100% of the total project cost, including soft costs, with a deductible of no more than $25,000 each claim. Coverage form shall include, but not be limited to:

- All Risk Coverage including Flood and Windstorm with no coinsurance clause
- Guaranteed policy extension provision
- Waiver of Occupancy Clause Endorsement, which will enable the City to occupy the facility under construction/renovation during the activity
- Storage and transport of materials, equipment, supplies of any kind whatsoever to be used on or incidental to the project
- Equipment Breakdown for cold testing of all mechanized, pressurized, or electrical equipment

This policy shall insure the interests of the owner, contractor, and subcontractors in the property against all risk of physical loss and damage, and name the City as a loss payee. This insurance shall remain in effect until the work is completed and the property has been accepted by the City.

**NOTE: CITY PROJECT NUMBER AND NAME MUST APPEAR ON EACH CERTIFICATE, AND THE CITY OF FORTLAUDERDALE MUST BE NAMED ON THE CERTIFICATE AS AN "ADDITIONAL INSURED" ON ALL LIABILITY POLICIES, WITH THE EXCEPTION OF WORKERS' COMPENSATION.**

## 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.

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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 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 Paragraph 11.2.1, 11.2.2 and 11.2.3 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

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attributable to such 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, 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

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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, servants or employees; (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

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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 trails 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, at any time or from time to time order additions, deletions or revisions in the Work through the issuance of Change Orders. Upon receipt of a Change Order, the Contractor shall proceed with the Work involved. All Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 14 or Article 15 on the basis of a claim made by either Party.

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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

Change of Contract Price, approved by City, shall be computed as follows:

14.1 Cost of the Work: The term "Cost of the Work" means the sum of all direct costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by the City, these costs shall be in amounts no higher than those prevailing in the City and shall include only the following items and shall not include any of the costs itemized in Paragraph 14.3:

14.1.1 Payroll costs for employees in the direct employ of the Contractor in the performance of the Work under schedules of job classifications agreed upon by the City and the Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus and cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, worker's compensation, health and retirement benefits, bonuses, sick leave, vacation and applicable holiday pay.

14.1.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage, and required suppliers and field services. All cash discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the City, and the Contractor shall make provisions so that they may be obtained.

14.1.3 Supplemental costs including the following:

14.1.3.1 Cost, including transportation and maintenance of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work.

14.1.3.2 Rentals of all construction equipment and machinery and the parts whether rented from the Contractor or others in accordance with rental agreements approved by the City, and the costs of transporting, loading, unloading, installation, dismantling and removal. The rental of any such equipment, machinery or parts shall cease when the use is no longer necessary for the Work.

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14.1.3.3 Sales, consumer, use or similar taxes related to the Work and for which the Contractor is liable, imposed by laws and regulations.

14.1.3.4 Royalty payments and fees for permits and licenses.

14.1.3.5 The cost of utilities, fuel and sanitary facilities at the Work site.

14.1.3.6 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

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

14.2 The Contract Price may only be increased by a Change Order when Work is modified in accordance with Article 13 and approved by the City in writing. Any claim for an increase in the Contract Price resulting from a Change Order shall be based on written notice delivered to the Project Manager within ten (10) days of the occurrence of the Change Order giving rise to the claim. Notice of the amount of the claim with supporting data shall be included in the Change Order and delivered within twenty (20) days of such occurrence unless Project Manager allows an additional period of time to ascertain accurate cost data. Any change in the Contract Price resulting from any such claim shall be incorporated in the Change Order. **IT IS EXPRESSLY AND SPECIFICALLY AGREED THAT ANY AND ALL CLAIMS FOR CHANGES TO THE CONTRACT PRICE SHALL BE WAIVED IF NOT SUBMITTED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.**

14.3 Not Included in the Cost of the Work: The term “cost of the Work” shall not include any of the following:

14.3.1 Payroll costs and other compensation of the Contractor’s officers executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditor, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by the Contractor whether at the site or in the Contractor’s principal or branch office for general administration of the work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 14.1.1, all of which are to be considered administrative costs covered by the Contractor’s fee.

14.3.2 Expenses of the Contractor’s principal and branch offices other than the Contractor’s office at the site.

14.3.3 Any part of the Contractor’s capital expenses, including interest on the Contractor’s capital employed for the Work and charges against the Contractor for delinquent payments.

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14.3.4 Cost of premiums for all bonds and for all insurance whether or not the Contractor is required by the Contract Documents to purchase and maintain the same.

14.3.5 Costs due to the negligence of the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

14.3.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 14.1

14.4 Basis of Compensation: The Contractor's compensation, allowed to the Contractor for overhead and profit, shall be determined as follows:

14.4.1 A mutually acceptable negotiated fee:

14.4.1.1 For costs incurred under Paragraphs 14.1.1 and 14.1.2, the Contractor's fee shall not exceed five percent (5%).

14.4.1.2 No fee shall be payable on the basis of costs itemized under Paragraphs 14.1.3.1, 14.1.3.2, 14.1.3.3, 14.1.3.4, 14.1.3.5, 14.1.3.6, 14.1.3.7, 14.3.1, 14.3.2, 14.3.3, 14.3.4, 14.3.5 and 14.3.6.

14.4.1.3 The amount of credit to be allowed by the Contractor to the City for any such change which results in a net decrease plus a deduction in the Contractor's fee by an amount equal to five percent (5%) for the net decrease.

14.4.1.4 When both additions and credits are involved in any one change the combined overhead and profit shall be figured on the basis of net increase if any, however, not to exceed five percent (5%) of the agreed compensation. Profit will not be paid on any Work not performed.

14.5 Cost Breakdown Required: Whenever the cost of any Work is to be determined pursuant to this Article, the Contractor will submit in form acceptable to the City an itemized cost breakdown together with supporting documentation. Whenever a change in the Work is to be based upon mutual acceptance of a lump sum, whether the amount is an addition, credit, or no-charge-in-cost, the Contractor shall submit an estimate substantiated by a complete itemized breakdown:

14.5.1 The breakdown shall list quantities and unit prices for materials, labor, equipment and other items of cost.

14.5.2 Whenever a change involves the Contractor and one (1) or more subcontractors and the change is an increase in the agreed compensation, the overhead and profit percentage for the Contractor and each subcontractor shall be itemized separately.

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14.6 Time for the City to Approve Extra Work: Any Extra Work in an amount up to and not exceeding a cumulative amount of $25,000 for a specific project can be approved by the City Manager and shall require a written Change Order proposal to be submitted to the Public Works Director for submittal and approval by the City Manager. Extra Work exceeding the cumulative amount of $25,000 for a specific project must be approved by the City Commission and a written Change Order proposal must be submitted to the Public Works Director for submittal and approval by the City Manager and City Commission. No financial or time claim for delay to the project resulting from the Change Order approval process outlined above under Section 14.6 will be allowed.

## ARTICLE 15 – CHANGE OF THE CONTRACT TIME

15.1 The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to the Project Manager within five (5) days of the occurrence of the event giving rise to the claim. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

15.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of the Contractor if a claim is made there for as provided in Paragraph 15.1. Such delays shall include but not be limited to, acts or neglect by the City, or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

15.3 All time limits stated in the Contract Documents are of the essence. The provisions of this Article 15 shall not exclude recovery for damages for delay by the Contractor.

15.4 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.

15.5 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.

## ARTICLE 16 – LIQUIDATED DAMAGES

16.1 Upon failure of the Contractor to complete the Work within the time specified for completion, the Contractor shall pay to the City the sum of **Three Hundred Dollars ($300.00)** for each and every calendar day that the completion of the Work is delayed beyond the time specified in this Agreement for completion, 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

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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 portion of the Work 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 No Extended Damages: 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 City May Suspend Work: 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 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's Right to Terminate Contract: The City may terminate this Agreement upon fifteen (15) calendar days' written notice upon the occurrence of any one or more of the following events:

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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 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.

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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 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.

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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 have been so 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.

## 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

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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.

## 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

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with copy to the:

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 No Extended Damages: 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 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

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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 or 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 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.

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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 (2018), 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 (2018), 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 (2018), 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 (2018), 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 (2018), 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.

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:

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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 (2018), 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.

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Annual Sewer Repairs and Replacement Contract
(Contractor)
Project# 12448

**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: _____
CHRISTOPHER J. LAGERBLOOM, City Manager

(CORPORATE SEAL)

ATTEST:

By: _____
JEFFREY A. MODARELLI
City Clerk

Approved as to Legal Form:

By:_____
RHONDA MONTOYA HASAN
Assistant City Attorney

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**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 _____, 2018, 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 City's Transportation and Mobility Department, Broward County, Florida Department of Transportation, as applicable, 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 (2018), 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 (2018), 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 (2018), 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 (2018), 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 (2018), 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 (2018), 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.

**CITY OF FORT LAUDERDALE**
**GENERAL CONDITIONS**

These instructions are standard for all contracts for commodities or services issued through the City of Fort Lauderdale Procurement Services Division. The City may delete, supersede, or modify any of these standard instructions for a particular contract by indicating such change in the Invitation to Bid (ITB) Special Conditions, Technical Specifications, Instructions, Proposal Pages, Addenda, and Legal Advertisement. In this general conditions document, Invitation to Bid (ITB), Request for Qualifications (RFQ), and Request for Proposal (RFP) are interchangeable.

**PART I BIDDER PROPOSAL PAGE(S) CONDITIONS:**

**1.01 BIDDER ADDRESS**: The City maintains automated vendor address lists that have been generated for each specific Commodity Class item through our bid issuing service, BidSync. Notices of Invitations to Bid (ITB'S) are sent by e-mail to the selection of bidders who have fully registered with BidSync or faxed (if applicable) to every vendor on those lists, who may then view the bid documents online. Bidders who have been informed of a bid's availability in any other manner are responsible for registering with BidSync in order to view the bid documents. There is no fee for doing so. If you wish bid notifications be provided to another e-mail address or fax, please contact BidSync. If you wish purchase orders sent to a different address, please so indicate in your bid response. If you wish payments sent to a different address, please so indicate on your invoice.

**1.02 DELIVERY:** Time will be of the essence for any orders placed as a result of this ITB. The City reserves the right to cancel any orders, or part thereof, without obligation if delivery is not made in accordance with the schedule specified by the Bidder and accepted by the City.

**1.03 PACKING SLIPS:** It will be the responsibility **of** the awarded Contractor, to attach all packing slips to the OUTSIDE of each shipment. Packing slips must provide a detailed description of what is to be received and reference the City of Fort Lauderdale purchase order number that is associated with the shipment. Failure to provide a detailed packing slip attached to the outside of shipment may result in refusal of shipment at Contractor's expense.

**1.04 PAYMENT TERMS AND CASH DISCOUNTS:** Payment terms, unless otherwise stated in this ITB, will be considered to be net 45 days after the date of satisfactory delivery at the place of acceptance and receipt of correct invoice at the office specified, whichever occurs last. Bidder may offer cash discounts for prompt payment but they will not be considered in determination of award. If a Bidder offers a discount, it is understood that the discount time will be computed from the date of satisfactory delivery, at the place of acceptance, and receipt of correct invoice, at the office specified, whichever occurs last.

**1.05 TOTAL BID DISCOUNT:** If Bidder offers a discount for award of all items listed in the bid, such discount shall be deducted from the total of the firm net unit prices bid and shall be considered in tabulation and award of bid.

**1.06 BIDS FIRM FOR ACCEPTANCE:** Bidder warrants, by virtue of bidding, that the bid and the prices quoted in the bid will be firm for acceptance by the City for a period of one hundred twenty (120) days from the date of bid opening unless otherwise stated in the ITB.

**1.07 VARIANCES:** For purposes of bid evaluation, Bidder's must indicate any variances, no matter how slight, from ITB General Conditions, Special Conditions, Specifications or Addenda in the space provided in the ITB. No variations or exceptions by a Bidder will be considered or deemed a part of the bid submitted unless such variances or exceptions are listed in the bid and referenced in the space provided on the bidder proposal pages. If variances are not stated, or referenced as required, it will be assumed that the product or service fully complies with the City's terms, conditions, and specifications.

By receiving a bid, City does not necessarily accept any variances contained in the bid. All variances submitted are subject to review and approval by the City. If any bid contains material variances that, in the City's sole opinion, make that bid conditional in nature, the City reserves the right to reject the bid or part of the bid that is declared, by the City as conditional.

**1.08 NO BIDS:** If you do not intend to bid please indicate the reason, such as insufficient time to respond, do not offer product or service, unable to meet specifications, schedule would not permit, or any other reason, in the space provided in this ITB. Failure to bid or return no bid comments prior to the bid due and opening date and time, indicated in this ITB, may result in your firm being deleted from our Bidder's registration list for the Commodity Class Item requested in this ITB.

**1.09 MINORITY AND WOMEN BUSINESS ENTERPRISE PARTICIPATION AND BUSINESS DEFINITIONS:** 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 51 percent of which is owned by minority group members or, in the case of a publicly owned business, at least 51 percent 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.

Women Business Enterprise (WBE) a "Women Owned or Controlled Business" is a business enterprise at least 51 percent of which is owned by females or, in the case of a publicly owned business, at least 51 percent 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, which includes persons having origins in any of the Black racial groups of Africa.
WHITE, which includes persons whose origins are Anglo-Saxon and Europeans and persons of Indo-European decent including Pakistani and East Indian.
HISPANIC, which includes persons of Mexican, Puerto Rican, Cuban, Central and South American, or other Spanish culture or origin, regardless of race.
NATIVE AMERICAN, which includes persons whose origins are American Indians, Eskimos, Aleuts, or Native Hawaiians.
ASIAN AMERICAN, which includes persons having origin in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

**1.10 MINORITY-WOMEN BUSINESS ENTERPRISE PARTICIPATION**

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. Proposers are requested to include in their proposals a narrative describing their past accomplishments and intended actions in this area. If proposers are considering minority or women owned enterprise participation in their proposal, those firms, and their specific duties have to be identified in the proposal. If a proposer is considered for award, he or she will be asked to meet with City staff so that the intended MBE/WBE participation can be formalized and included in the subsequent contract.

**1.11 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 (2018), 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 (2018), 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 (2018), 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 (2018), 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 (2018), as may be amended or revised.

**1.12 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.

**Part II DEFINITIONS/ORDER OF PRECEDENCE**:

**2.01 BIDDING DEFINITIONS** The City will use the following definitions in its general conditions, special conditions, technical specifications, instructions to bidders, addenda and any other document used in the bidding process:

INVITATION TO BID (ITB) The solicitation document used for soliciting competitive sealed bids for goods or services.
INVITATION TO NEGOTIATE (ITN) All solicitation documents, regardless of medium, whether attached to or incorporated by reference in solicitations for responses from firms that invite proposals from interested and qualified firms so the city may enter into negotiations with the firm(s) determined most capable of providing the required goods or services.
REQUEST FOR PROPOSALS (RFP) A solicitation method used for soliciting competitive sealed proposals to determine the best value among proposals for goods or services for which price may not be the prevailing factor in award of the contract, or the scope of work, specifications or contract terms and conditions may be difficult to define. Such solicitation will consider the qualifications of the proposers along with evaluation of each proposal using identified and generally weighted evaluation criteria. RFPs may include price criteria whenever feasible, at the discretion of the city.
REQUEST FOR QUALIFICATIONS (RFQ) A solicitation method used for requesting statements of qualifications in order to determine the most qualified proposer for professional services.
BID – a price and terms quote received in response to an ITB.
PROPOSAL – a proposal received in response to an RFP.
BIDDER – Person or firm submitting a Bid.
PROPOSER – Person or firm submitting a Proposal.
RESPONSIVE BIDDER – A firm who has submitted a bid, offer, quote, or response which conforms in all material respects to the competitive solicitation document and all of its requirements.
RESPONSIBLE BIDDER – A firm who is fully capable of meeting all requirements of the solicitation and subsequent contract. The respondent must possess the full capability, including financial and technical, ability, business judgment, experience, qualifications, facilities, equipment, integrity, capability, and reliability, in all respects to perform fully the contract requirements and assure good faith performance as determined by the city.
FIRST RANKED PROPOSER – That Proposer, responding to a City RFP, whose Proposal is deemed by the City, the most advantageous to the City after applying the evaluation criteria contained in the RFP.
SELLER – Successful Bidder or Proposer who is awarded a Purchase Order or Contract to provide goods or services to the City.
CONTRACTOR – Any firm having a contract with the city. Also referred to as a "Vendor".
CONTRACT – All types of agreements, including purchase orders, for procurement of supplies, services, and construction, regardless of what these agreements may be called.
CONSULTANT – A firm providing professional services for the city.

**2.02 SPECIAL CONDITIONS:** Any and all Special Conditions contained in this ITB that may be in variance or conflict with these General Conditions shall have precedence over these General Conditions. If no changes or deletions to General Conditions are made in the Special Conditions, then the General Conditions shall prevail in their entirety,

**PART III BIDDING AND AWARD PROCEDURES**:

**3.01 SUBMISSION AND RECEIPT OF BIDS:** To receive consideration, bids must be received prior to the bid opening date and time. Unless otherwise specified, Bidders should use the proposal forms provided by the City. These forms may be duplicated, but failure to use the forms may cause the bid to be rejected. Any erasures or corrections on the bid must be made in ink and initialed by Bidder in ink. All information submitted by the Bidder shall be printed, typewritten or filled in with pen and ink. Bids shall be signed in ink. Separate bids must be submitted for each ITB issued by the City in separate sealed envelopes properly marked. When a particular ITB or RFP requires multiple copies of bids or proposals they may be included in a single envelope or package properly sealed and identified. Only send bids via facsimile transmission (FAX) if the ITB specifically states that bids sent via FAX will be considered. If such a statement is not included in the ITB, bids sent via FAX will be rejected. Bids will be publicly opened in the Procurement Office, or other designated area, in the presence of Bidders, the public, and City staff. Bidders and the public are invited and encouraged to attend bid

openings. Bids will be tabulated and made available for review by Bidder's and the public in accordance with applicable regulations.

**3.02 MODEL NUMBER CORRECTIONS:** If the model number for the make specified in this ITB is incorrect, or no longer available and replaced with an updated model with new specifications, the Bidder shall enter the correct model number on the bidder proposal page. In the case of an updated model with new specifications, Bidder shall provide adequate information to allow the City to determine if the model bid meets the City's requirements.

**3.03 PRICES QUOTED:** Deduct trade discounts, and quote firm net prices. Give both unit price and extended total. 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.

**3.04 TAXES:** The City of Fort Lauderdale is exempt from Federal Excise and Florida Sales taxes on direct purchase of tangible property. Exemption **number for EIN is 59-6000319, and State Sales tax exemption number is 85-8013875578C-1.**

**3.05 WARRANTIES OF USAGE:** Any quantities listed in this ITB as estimated or projected are provided for tabulation and information purposes only. No warranty or guarantee of quantities is given or implied. It is understood that the Contractor will furnish the City's needs as they arise.

**3.06 APPROVED EQUAL:** When the technical specifications call for a brand name, manufacturer, make, model, or vendor catalog number with acceptance of APPROVED EQUAL, it shall be for the purpose of establishing a level of quality and features desired and acceptable to the City. In such cases, the City will be receptive to any unit that would be considered by qualified City personnel as an approved equal. In that the specified make and model represent a level of quality and features desired by the City, the Bidder must state clearly in the bid any variance from those specifications. It is the Bidder's responsibility to provide adequate information, in the bid, to enable the City to ensure that the bid meets the required criteria. If adequate information is not submitted with the bid, it may be rejected. The City will be the sole judge in determining if the item bid qualifies as an approved equal.

**3.07 MINIMUM AND MANDATORY TECHNICAL SPECIFICATIONS:** The technical specifications may include items that are considered minimum, mandatory, or required. If any Bidder is unable to meet or exceed these items, and feels that the technical specifications are overly restrictive, the bidder must notify the Procurement Services Division immediately. Such notification must be received by the Procurement Services Division prior to the deadline contained in the ITB, for questions of a material nature, or prior to five (5) days before bid due and open date, whichever occurs first. If no such notification is received prior to that deadline, the City will consider the technical specifications to be acceptable to all bidders.

**3.08 MISTAKES:** Bidders are cautioned to examine all terms, conditions, specifications, drawings, exhibits, addenda, delivery instructions and special conditions pertaining to the ITB. Failure of the Bidder to examine all pertinent documents shall not entitle the bidder to any relief from the conditions imposed in the contract.

**3.09 SAMPLES AND DEMONSTRATIONS:** Samples or inspection of product may be requested to determine suitability. Unless otherwise specified in Special Conditions, samples shall be requested after the date of bid opening, and if requested should be received by the City within seven (7) working days of request. Samples, when requested, must be furnished free of expense to the City and if not used in testing or destroyed, will upon request of the Bidder, be returned within thirty (30) days of bid award at Bidder's expense. When required, the City may request full demonstrations of units prior to award. When such demonstrations are requested, the Bidder shall respond promptly and arrange a demonstration at a convenient location. Failure to provide samples or demonstrations as specified by the City may result in rejection of a bid.

**3.10 LIFE CYCLE COSTING**: If so specified in the ITB, the City may elect to evaluate equipment proposed on the basis of total cost of ownership. In using Life Cycle Costing, factors such as the following may be considered: estimated useful life, maintenance costs, cost of supplies, labor intensity, energy usage, environmental impact, and residual value. The City reserves the right to use those or other applicable criteria, in its sole opinion that will most accurately estimate total cost of use and ownership.

**3.11 BIDDING ITEMS WITH RECYCLED CONTENT:** In addressing environmental concerns, the City of Fort Lauderdale encourages Bidders to submit bids or alternate bids containing items with recycled content. When submitting bids containing items with recycled content, Bidder shall provide documentation adequate for the City to verify the recycled content. The City prefers packaging consisting of materials that are degradable or able to be recycled. When specifically stated in the ITB, the City may give preference to bids containing items

manufactured with recycled material or packaging that is able to be recycled.

**3.12 USE OF OTHER GOVERNMENTAL CONTRACTS:** The City reserves the right to reject any part or all of any bids received and utilize other available governmental contracts, if such action is in its best interest.

**3.13 QUALIFICATIONS/INSPECTION:** Bids will only be considered from firms normally engaged in providing the types of commodities/services specified herein. The City reserves the right to inspect the Bidder's facilities, equipment, personnel, and organization at any time, or to take any other action necessary to determine Bidder's ability to perform. The Procurement Director reserves the right to reject bids where evidence or evaluation is determined to indicate inability to perform.

**3.14 BID SURETY:** If Special Conditions require a bid security, it shall be submitted in the amount stated. A bid security can be in the form of a bid bond or cashier's check. Bid security will be returned to the unsuccessful bidders as soon as practicable after opening of bids. Bid security will be returned to the successful bidder after acceptance of the performance bond, if required; acceptance of insurance coverage, if required; and full execution of contract documents, if required; or conditions as stated in Special Conditions.

**3.15 PUBLIC RECORDS/TRADE SECRETS/COPYRIGHT:** The Proposer's response to the RFP 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 RFP and the Contract to be executed for this RFP, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the RFP purporting to require confidentiality of any portion of the Proposer's response to the RFP, 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 RFP 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 RFP AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE RFP OR ANY PART THEREOF AS COPYRIGHTED.

**3.16 PROHIBITION OF INTEREST:** No contract will be awarded to a bidding firm who has City elected officials, officers or employees affiliated with it, unless the bidding firm has fully complied with current Florida State Statutes and City Ordinances relating to this issue. Bidders must disclose any such affiliation. Failure to disclose any such affiliation will result in disqualification of the Bidder and removal of the Bidder from the City's bidder lists and prohibition from engaging in any business with the City.

**3.17 RESERVATIONS 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.

If the ITB provides for a contract trial period, the City reserves the right, in the event the selected bidder does not perform satisfactorily, to award a trial period to the next ranked bidder or to award a contract to the next ranked bidder, if that bidder has successfully provided services to the City in the past. This procedure to

continue until a bidder is selected or the contract is re-bid, at the sole option of the City.

**3.18 LEGAL REQUIREMENTS:** Applicable provisions of all federal, state, county laws, and local ordinances, rules and regulations, shall govern development, submittal and evaluation of all bids received in response hereto and shall govern any and all claims and disputes which may arise between person(s) submitting a bid response hereto and the City by and through its officers, employees and authorized representatives, or any other person, natural or otherwise; and lack of knowledge by any bidder shall not constitute a cognizable defense against the legal effect thereof.

**3.19 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 CHIEF PROCUREMENT OFFICER, BY DELIVERING A LETTER OF PROTEST TO THE DIRECTOR OF FINANCE WITHIN FIVE (5) DAYS AFTER A NOTICE OF INTENT TO AWARD IS POSTED ON THE CITY'S WEB SITE AT THE FOLLOWING LINK:**
**https://www.fortlauderdale.gov/departments/finance/procurement-services/notices-of-intent-to-award**
**THE COMPLETE PROTEST ORDINANCE MAY BE FOUND ON THE CITY'S WEB SITE AT THE FOLLOWING LINK: https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH2AD_ARTVFI_DIV2PR_S2-182DIREPR**

## PART IV BONDS AND INSURANCE

**4.01 PERFORMANCE BOND:** If a performance bond is required in Special Conditions, the Contractor shall within fifteen (15) working days after notification of award, furnish to the City a Performance Bond, payable to the City of Fort Lauderdale, Florida, in the face amount specified in Special Conditions as surety for faithful performance under the terms and conditions of the contract. If the bond is on an annual coverage basis, renewal for each succeeding year shall be submitted to the City thirty (30) days prior to the termination date of the existing Performance Bond. The Performance Bond must be executed by a surety company of recognized standing, authorized to do business in the State of Florida and having a resident agent.

Acknowledgement and agreement is given by both parties that the amount herein set for the Performance Bond is not intended to be nor shall be deemed to be in the nature of liquidated damages nor is it intended to limit the liability of the Contractor to the City in the event of a material breach of this Agreement by the Contractor.

**4.02 INSURANCE:** If the Contractor is required to go on to City property to perform work or services as a result of ITB award, the Contractor shall assume full responsibility and expense to obtain all necessary insurance as required by City or specified in Special Conditions.

The Contractor shall provide to the Procurement Services Division original certificates of coverage and receive notification of approval of those certificates by the City's Risk Manager prior to engaging in any activities under this contract. The Contractors insurance is subject to the approval of the City's Risk Manager. The certificates must list the City as an ADDITIONAL INSURED for General Liability Insurance, and shall have no less than thirty (30) days written notice of cancellation or material change. Further modification of the insurance requirements may be made at the sole discretion of the City's Risk Manager if circumstances change or adequate protection of the City is not presented. Bidder, by submitting the bid, agrees to abide by such modifications.

**PART V PURCHASE ORDER AND CONTRACT TERMS:**

**5.01 COMPLIANCE TO SPECIFICATIONS, LATE DELIVERIES/PENALTIES:** Items offered may be tested for compliance to bid specifications. Items delivered which do not conform to bid specifications may be rejected and returned at Contractor's expense. Any violation resulting in contract termination for cause or delivery of items not conforming to specifications, or late delivery may also result in:

- Bidders name being removed from the City's bidder's mailing list for a specified period and Bidder will not be recommended for any award during that period.
- All City Departments being advised to refrain from doing business with the Bidder.
- All other remedies in law or equity.

**5.02 ACCEPTANCE, CONDITION, AND PACKAGING:** The material delivered in response to ITB award shall remain the property of the Seller until a physical inspection is made and the material accepted to the satisfaction of the City. The material must comply fully with the terms of the ITB, be of the required quality, new, and the latest model. All containers shall be suitable for storage and shipment by common carrier, and all prices shall include standard commercial packaging. The City will not accept substitutes of any kind. Any substitutes or material not meeting specifications will be returned at the Bidder's expense. Payment will be made only after City receipt and acceptance of materials or services.

**5.03 SAFETY STANDARDS:** All manufactured items and fabricated assemblies shall comply with applicable requirements of the Occupation Safety and Health Act of 1970 as amended, and be in compliance with Chapter 442, Florida Statutes. Any toxic substance listed in Section 38F-41.03 of the Florida Administrative Code delivered as a result of this order must be accompanied by a completed Safety Data Sheet (SDS).

**5.04 ASBESTOS STATEMENT:** All material supplied must be 100% asbestos free. Bidder, by virtue of bidding, certifies that if awarded any portion of the ITB the bidder will supply only material or equipment that is 100% asbestos free.

**5.05 OTHER GOVERNMENTAL ENTITIES:** If the Bidder is awarded a contract as a result of this ITB, the bidder may, if the bidder has sufficient capacity or quantities available, provide to other governmental agencies, so requesting, the products or services awarded in accordance with the terms and conditions of the ITB and resulting contract. Prices shall be F.O.B. delivered to the requesting agency.

**5.06 VERBAL INSTRUCTIONS PROCEDURE:** No negotiations, decisions, or actions shall be initiated or executed by the Contractor as a result of any discussions with any City employee. Only those communications which are in writing from an authorized City representative may be considered. Only written communications from Contractors, which are assigned by a person designated as authorized to bind the Contractor, will be recognized by the City as duly authorized expressions on behalf of Contractors.

**5.07 INDEPENDENT CONTRACTOR:** The Contractor is an independent contractor under this Agreement. Personal services provided by the Proposer shall be by employees of the Contractor and subject to supervision by the Contractor, and not as officers, employees, or agents of the City. Personnel policies, tax responsibilities, social security, health insurance, employee benefits, procurement policies unless otherwise stated in this ITB, and other similar administrative procedures applicable to services rendered under this contract shall be those of the Contractor.

**5.08 INDEMNITY/HOLD HARMLESS AGREEMENT:** The Contractor agrees to protect, defend, indemnify, and hold harmless the City of Fort Lauderdale and its officers, employees and agents from and against any and all losses, penalties, damages, settlements, claims, costs, charges for other expenses, or liabilities of every and any kind including attorney's fees, in connection with or arising directly or indirectly out of the work agreed to or performed by Contractor under the terms of any agreement that may arise due to the bidding process. Without limiting the foregoing, any and all such claims, suits, or other actions relating to personal injury, death, damage to property, defects in materials or workmanship, actual or alleged violations of any applicable Statute, ordinance, administrative order, rule or regulation, or decree of any court shall be included in the indemnity hereunder.

**5.09 TERMINATION FOR CAUSE:** If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligations under this Agreement, or if the Contractor shall violate any of the provisions of this Agreement, the City may upon written notice to the Contractor terminate the right of the Contractor to proceed under this Agreement, or with such part or parts of the Agreement as to which there has been default, and may hold the Contractor liable for any damages caused to the City by reason of such default and termination. In the event of such termination, any completed services performed by the Contractor under this Agreement shall, at the option of the City, become the City's property and the Contractor shall be entitled to receive equitable

compensation for any work completed to the satisfaction of the City. The Contractor, however, shall not be relieved of liability to the City for damages sustained by the City by reason of any breach of the Agreement by the Contractor, and the City may withhold any payments to the Contractor for the purpose of setoff until such time as the amount of damages due to the City from the Contractor can be determined.

**5.10 TERMINATION FOR CONVENIENCE:** The City reserves the right, in its best interest as determined by the City, to cancel contract by giving written notice to the Contractor thirty (30) days prior to the effective date of such cancellation.

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

**5.12 RECORDS/AUDIT:** The Contractor shall maintain during the term of the contract all books of account, reports and records in accordance with generally accepted accounting practices and standards for records directly related to this contract. The Contractor agrees to make available to the City Auditor or designee, during normal business hours and in Broward, Miami-Dade or Palm Beach Counties, all books of account, reports and records relating to this contract should be retained for the duration of the contract and for three years after the final payment under this Agreement, or until all pending audits, investigations or litigation matters relating to the contract are closed, whichever is later.

**5.13 PERMITS, TAXES, LICENSES:** The successful Contractor shall, at their own expense, obtain all necessary permits, pay all licenses, fees and taxes, required to comply with all local ordinances, state and federal laws, rules and regulations applicable to business to be carried out under this contract.

**5.14 LAWS/ORDINANCES:** The Contractor shall observe and comply with all Federal, state, local and municipal laws, ordinances rules and regulations that would apply to this contract.

5.15 **NON-DISCRIMINATION:** There shall be no discrimination as to race, sex, color, creed, age or national origin in the operations conducted under this contract. The following applies to contracts with values over $100,000: The Contractor certifies and represents that it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, ("Section 2-187"), by not discriminating against the Contractor's employees based on the employee's race, color, religion, gender (including identity or expression), marital status, sexual orientation, national origin, age, disability or any other protected classification as defined by applicable law, during the entire term of the contract that arises out of this ITB. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of the contract, entitling the City to pursue any of the following remedies or any remedy provided under applicable law: (a) The City may terminate the contract if the Contractor fails to comply with Section 2-187; and (b) The City may retain all monies due or to become due until the Contractor complies with Section 2-187; and (c) The Contractor may be subject to debarment or suspension proceedings consistent with the procedures in Section 2-183, Code of Ordinances of the City of Fort Lauderdale, Florida.

**5.16 UNUSUAL CIRCUMSTANCES:** If during a contract term where costs to the City are to remain firm or adjustments are restricted by a percentage or CPI cap, unusual circumstances that could not have been foreseen by either party of the contract occur, and those circumstances significantly affect the Contractor's cost in providing the required prior items or services, then the Contractor may request adjustments to the costs to the City to reflect the changed circumstances. The circumstances must be beyond the control of the Contractor, and the requested adjustments must be fully documented. The City may, after examination, refuse to accept the adjusted costs if they are not properly documented, increases are considered to be excessive, or decreases are considered to be insufficient. In the event the City does not wish to accept the adjusted costs and the matter cannot be resolved to the satisfaction of the City, the City will reserve the following options:

1. The contract can be canceled by the City upon giving thirty (30) days written notice to the Contractor with no penalty to the City or Contractor. The Contractor shall fill all City requirements submitted to the Contractor until the termination date contained in the notice.

2. The City requires the Contractor to continue to provide the items and services at the firm fixed (non-adjusted) cost until the termination of the contract term then in effect.

3. If the City, in its interest and in its sole opinion, determines that the Contractor in a capricious manner attempted to use this section of the contract to relieve them of a legitimate obligation under the contract, and no unusual circumstances had occurred, the City reserves the right to take any and all action under law or equity. Such action shall include, but not be limited to, declaring the Contractor in default and disqualifying him for receiving any business from the City for a stated period of time.

If the City does agree to adjusted costs, these adjusted costs shall not be invoiced to the City until the Contractor receives notice in writing signed by a person authorized to bind the City in such matters.

**5.17 ELIGIBILITY:** If applicable, the Contractor must first register with the Department of State of the State of Florida, in accordance with Florida State Statutes, prior to entering into a contract with the City.

**5.18 PATENTS AND ROYALTIES:** The Contractor, without exception, shall indemnify and save harmless the City and its employees from liability of any nature and kind, including cost and expenses for or on account of any copyrighted, patented or un-patented invention, process, or article manufactured or used in the performance of the contract, including its use by the City. If the Contractor uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or costs arising from the use of such design, device, or materials in any way involved in the work.

**5.19 ASSIGNMENT:** Contractor shall not transfer or assign the performance required by this ITB without the prior written consent of the City. Any award issued pursuant to this ITB, and the monies, which may become due hereunder, are not assignable except with the prior written approval of the City Commission or the City Manager or City Manager's designee, depending on original award approval.

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

**5.21 LOCATION OF UNDERGROUND FACILITIES:** If the Contractor, 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 Contractor, shall be deemed non-responsive to this solicitation in accordance with Section 2-184(5) of the City of Fort Lauderdale Code of Ordinances.

5.22 **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 954-828-5002, CITY CLERK'S OFFICE, 100 N. ANDREWS AVENUE, FORT LAUDERDALE, FLORIDA 33301, 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 (2018), 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.

## DETAILED SPECIFICATIONS

GENERAL: The work consists of furnishing all labor, tools, material, equipment, supplies and incidentals necessary for the construction of the contract items indicated on the Proposal. Mobilization and demobilization, sanitary facilities, barricades, insurance and bonds, and any other costs relating to performing the work shall be borne by the Contractor and included in the line items unit cost pricing. Work will be performed on City, County, or State roadways, right-of-ways, residential streets and City-owned property.

Contractor will be required to respond to emergency situations that may arise within the City at any time, i.e.: sewer force main break, water main break, structure failure, etc. Contractor is expected to be available 24 hours a day 7 days a week to respond and perform emergency repair work as needed, including holidays.

Refer to specification section 221316 Sanitary Waste and Vent Piping and section 221313 Facility Sanitary Sewers for additional information and requirements.

PROCEDURE FOR WORK ORDER: All work is scheduled through the Public Works Department. An official form (Work Order) with the location and amount of work to be done, including any necessary plans/sketches or back up information will be given to the contractor. Upon receipt of a Work Order, the contractor shall provide a cost estimate, based on the line items in the Contract, within three (3) working days.

The contractor shall commence work of each work order within five (5) working days of a notice to proceed for the specific work order. Prior to commencing work, the contractor shall submit a schedule to the Project Manager, identifying the number of working days that will be required to complete the scope of work for the specific work order. The work shall be completed within the time period identified in the approved schedule, subject to approved extensions authorized by the Project Manager. Failure to complete the work of any work order, within the agreed to and approved schedule timeframe, shall subject the contractor to Article 16 Liquidated Damages, provision of the contract.

WORK IN MAJOR STREETS: Where the repair is located on streets under the jurisdiction of FDOT or Broward County, or on city streets with a classification of collector street or higher, the work may be directed by the authority having jurisdiction, to be executed at nighttime, weekends, or legal holidays, to mitigate traffic impacts and/or reduce inconvenience to the travelling public.

The contractor is hereby informed that there shall be no additional compensation for executing work orders outside of normal working hours, where required as a permit condition by the authority having jurisdiction or where required by the city because of the nature of the location, e.g. business/commercial district, as in a downtown area.

INSPECTOR OVERTIME: The contractor's attention is directed to Article 8.10, Sheet C-11 of the Construction Agreement, concerning regular work hours and inspector overtime charges. Unless incurred as a result of a permit condition, the contractor shall pay for additional charges

to the city for inspector 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. 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.

QUANTITIES OF WORK: 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 during the period of this contract.

CONTRACT DATE: This contract shall run for **two (2)** year, commencing on the date of Commission approval. All work orders authorized before the actual termination date must be completed under this contract.

CONTRACTOR EXTENSION: The City reserves the right to extend the contract for **2** additional **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.

CONTRACTOR EXPERIENCE: Contractor shall have been performing underground pipeline repair/replacement for a minimum of five (5) years. The qualifier for the Contractor's firm must be an officer or principal of that firm. In addition, Contractor shall have three (3) years' experience working on public agency projects.

The work anticipated under this contract occasionally involves working in difficult ground conditions, involving deep excavations, high water table, well-pointing, etc. The successful contractor must be able to show experience with pressure pipe and gravity sewer work in similar type conditions. Contractor must also have successfully completed permitted work not only in roads under local jurisdictions but also in county and state jurisdictions.

SPECIFICATIONS: All work shall be done in accordance with GENERAL CONDITIONS, except where noted otherwise in these detailed specifications.

REMOVAL OF PIPE: Contractor shall excavate down to the existing pipe with a backhoe; however, sections of pipe shall be removed by hand excavation around the pipe. Special care shall be used to prevent damage to existing sections of pipe.

CONNECTION TO EXISTING PIPE: Contractor shall visually check the existing pipeline (minimum 20') to determine physical condition. The contractor shall provide a lamp for this inspection. No pipe shall be connected to another which has a crack or any damage. The existing pipe shall be cut with a saw or pipe cutter. After the existing pipe is cut and cleaned, contractor shall check condition of pipe and adjacent pipe for any damage, verify elevation of existing pipe, and notify the City's Project Manager that pipe is ready for inspection, prior to making connection. Connection shall not be made until authorized by the City's Project Manager. Upstream connection shall be made so that gap between pipe ends is less than ½-inch.

**POINT REPAIR ITEMS**

ITEM 1 – WELL POINT SYSTEM: Shall include well point pumps, header pipe, and points, up to 40LF installed around excavation with discharge pipe to drainage structure and/or sedimentation box as required by the permitting jurisdiction and City's Project Manager.

ITEM 2: If header pipe and points are required in excess of 40LF of excavation. Extension shall mean on both sides; i.e., 10-feet header pipe and points each side paid for as 1-10 foot increase. **NOTE: Additional header lengths must be 5-feet or greater beyond the 10-foot increment to count as an additional 10-foot increase.**

ITEM 3 – BYPASS PUMP: Contractor shall provide all required pipe, hose, plugs, and pump to re-route wastewater or storm water around repair location during construction.
Dependent on the location, the contractor may be required to build an enclosure around pumps or use an electric pump as primary bypass for noise abatement issues. On sewer lines with minimum flow, as authorized by the City's Project Manager and utility, the upstream manhole may be plugged and wastewater pumped out by the Public Services Department vacuum truck.

ITEMS 4-6 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the repair and replacement of existing sanitary sewer pipe **8-inch - 10-inch diameter**, up to 20LF. Contractor shall remove (carefully) existing vitrified clay or other pipe and replace with **8-inch - 10-inch diameter** C-900 150 psi rated PVC. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts).

The ends of the new pipe shall be connected to existing pipe with Atlas or Fernco couplings with stainless steel shear band.

ITEMS 7-9 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary sewer pipe 8-inch - 10-inch diameter, **in excess of 20LF**, as specified in ITEMS 4-6. See line items on proposal for specified depths of excavation.

ITEM 10 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary sewer pipe **12-inch - 15-inch diameter**, as specified in ITEMS 4-6, at all excavation depths.

ITEM 11 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary sewer pipe **18-inch diameter**, as specified in ITEMS 4-6, at all excavation depths.

ITEM 12 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary sewer pipe **24-inch diameter**, as specified in ITEMS 4-6, at all excavation depths.

ITEM 13 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary sewer pipe **30-inch diameter**, as specified in ITEMS 4-6, at all excavation depths.

ITEM 14 – REPAIR OR REPLACE EXISTING SANITARY SEWER PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary sewer pipe **36-inch diameter**, as specified in ITEMS 4-6, at all excavation depths.

ITEM 15-18 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the repair and replacement of existing sanitary sewer force main pipe 4-inch - 6-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 4-inch - 6-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and epoxy lined with Protecto 401 or approved equal.

ITEM 19-20 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary force main pipe **4-inch - 6-inch diameter**, as specified in ITEMS 15-18, See line items on proposal for specified depths of excavation.

ITEM 21-24 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the repair and replacement of existing sanitary sewer force main pipe 8-inch - 10-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 8-inch - 10-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and epoxy lined with Protecto 401 or approved equal.

ITEM 25-26 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary force main pipe **8-inch - 10-inch diameter**, as specified in ITEMS 21-24, See line items on proposal for specified depths of excavation.

ITEM 27-30 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the repair and replacement of existing sanitary sewer force main pipe 12-inch - 16-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 12-inch - 16-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and epoxy lined with Protecto 401 or approved equal.

ITEM 31-32 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary force main pipe **12-inch -r 16-inch diameter**, as specified in ITEMS 27-30, See line items on proposal for specified depths of excavation.

ITEM 33-34 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the repair and replacement of existing sanitary sewer force main pipe 20-inch - 24-

inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 20-inch - 24-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and epoxy lined with Protecto 401 or approved equal.

ITEM 35 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary force main pipe **20-inch - 24-inch diameter**, as specified in ITEMS 33-34, See line items on proposal for specified depths of excavation.

ITEM 36-37 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the repair and replacement of existing sanitary sewer force main pipe 30-inch - 36-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 30-inch - 36-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and epoxy lined with Protecto 401 or approved equal.

ITEM 38 – REPAIR OR REPLACE EXISTING SANITARY SEWER FORCE MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing sanitary force main pipe **30-inch - 36-inch diameter**, as specified in ITEMS 36-37, See line items on proposal for specified depths of excavation.

ITEM 39: REMOVE EXISTING PIPE AND INSTALL NEW INTO EXISTING SANITARY SEWER MANHOLE: Shall be used to replace existing pipes entering existing sanitary sewer manholes as required.

ITEM 40-43 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 4-inch - 6-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 4-inch - 6-inch diameter C-900 150 psi rated PVC. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts).

ITEM 44-45 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **4-inch - 6-inch diameter**, as specified in ITEMS 40-43, See line items on proposal for specified depths of excavation.

ITEM 46-49 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 8-inch - 10-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 8-inch - 10-inch diameter C-900 150 psi rated PVC. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This

item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts).

ITEM 50-51 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **8-inch - 10-inch diameter**, as specified in ITEMS 46-49, See line items on proposal for specified depths of excavation.

ITEM 52-55 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 12-inch - 16-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 12-inch - 16-inch diameter C-900 150 psi rated PVC. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts).

ITEM 56-57 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **12-inch - 16-inch diameter**, as specified in ITEMS 52-55, See line items on proposal for specified depths of excavation.

ITEM 58-61 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 20-inch - 24-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 20-inch - 24-inch diameter C-900 150 psi rated PVC. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts).

ITEM 62-63 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **20-inch - 24-inch diameter**, as specified in ITEMS 58-61, See line items on proposal for specified depths of excavation.

ITEM 64-65 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 30-inch - 36-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 30-inch - 36-inch diameter C-900 150 psi rated PVC. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts).

ITEM 66 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **30-inch - 36-inch diameter**, as specified in ITEMS 64-65, See line items on proposal for specified depths of excavation.

ITEM 67-70 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 4-inch - 6-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 4-inch - 6-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used

as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and cement lined.

ITEM 71-72 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **4-inch - 6-inch diameter**, as specified in ITEMS 67-70, See line items on proposal for specified depths of excavation.

ITEM 73-76– REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 8-inch - 10-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 8-inch - 10-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and cement lined.

ITEM 77-78 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **8-inch - 10-inch diameter**, as specified in ITEMS 73-76, See line items on proposal for specified depths of excavation.

ITEM 79-82 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 12-inch - 16-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 12-inch - 16-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and cement lined.

ITEM 83-84 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **12-inch - 16-inch diameter**, as specified in ITEMS 79-82, See line items on proposal for specified depths of excavation.

ITEM 85-86 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 20-inch - 24-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 20-inch - 24-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and cement lined.

ITEM 87 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **20-inch - 24-inch diameter**, as specified in ITEMS 85-86, See line items on proposal for specified depths of excavation.

ITEM 88-89 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the repair and replacement of existing water main pipe 30-inch - 36-inch diameter, up to 20LF. Contractor shall remove (carefully) existing pipe and replace with 30-inch - 36-inch diameter ductile iron pipe, pressure Class 350. New pipe shall be laid on undisturbed suitable soil at bottom of excavation

to permit the pipe to be properly laid. Granular material (e.g. ¾ inch washed rock) may be used as an alternate bedding material. See line items on proposal for specified depths of excavation. This item should include but is not limited to excavation, shoring, steel plates, bedding, fill material, density tests (12" lifts). The ductile iron pipe should be restrained and cement lined.

ITEM 90 – REPAIR OR REPLACE EXISTING WATER MAIN PIPE: Shall be used for the **additional cost** to repair or replace existing water main pipe **30-inch - 36-inch diameter**, as specified in ITEMS 88-89, See line items on proposal for specified depths of excavation.

ITEM 91- LATERALS: Shall be used for the installation of new 6-inch diameter laterals, and repair or replacement of existing 6-inch diameter laterals. This item shall include all materials, wye (or tee), bends, lateral pipe (PVC SDR26), up to 20LF beyond centerline of main.

ITEM 92 – LATERALS: Shall be used for the **additional cost** of installing new 6-inch diameter laterals, and repair or replacement of existing 6-inch diameter laterals in excess of 20LF from centerline of main, as specified in ITEM 91.

ITEM 93 – LATERALS: Shall be used for the **additional cost** for repair, replacement, or relocation, of existing lateral stacks (single or double), or lateral lines at locations already under repair under this contract. A new wye or tee shall be installed in the main sewer. The lateral line shall be installed so that it makes a maximum angle of 45˚ with the horizontal plane. Where existing lateral is a stack connection, the lateral shall be removed or re-laid to less than 45˚ angle. This item shall include all materials, wye (or tee), bends, 6-inch lateral pipe and coupling to reconnect to existing lateral line. This item shall include, lateral stack, lateral line, replacing damaged pipe and fittings with new C-900, Class 150 pipe, fittings, Atlas couplings (or equal) and compacted backfill.

Existing lateral lines damaged by the contractor will not be paid for by the City. The contractor shall use care in removing existing lateral lines when repairing main line. Contractor is advised that work for new lateral construction may be reduced or even eliminated.

ITEM 94-95 – CLEAN-OUT: Shall be used for the **installation of** 6-inch diameter cleanout on existing laterals on City right of way, including concrete collar when installed on swales.

ITEM 96-100 – NEW MANHOLES: Shall be used to furnish and install 4-ft. diameter precast concrete sanitary sewer manholes. This item shall include cast iron frame and cover, and all necessary tie-ins for a complete installation. Contractor shall submit shop drawings of manhole to City's Project Manager for approval prior to purchase and installation of manhole. See specific line item in proposal for height of structures.

ITEM 101-105 - REMOVAL OF MANHOLES: Shall be used for the removal and proper disposal of existing 4-ft. diameter precast concrete or brick sanitary sewer manholes. See specific line item in proposal for height of structures.

ITEM 106 – MANHOLE RING AND COVER: Shall be used for removal and installation of new 24-inch manhole ring and cover on existing manhole structures.

ITEM 107 – CORING: Shall be used for coring existing structures for pipe tie-ins. This item shall include saw-cutting, bricks and mortar, and all necessary tools and equipment for a complete tie-in to an existing structure.

ITEM 108-118 – HEAVY DUTY (H-20 RATED) HATCH INCLUDING FRAME AND COVER: Shall be used for the installation of new heavy duty (H-20 Rated) vapor tight (gasket) aluminum hatch and frame with stainless steel hardware, including but not limited to removal and disposal of existing cover and frame, concrete works, shop drawings submittal, among others. Contractor shall submit shop drawings of hatches to City's Project Manager for approval prior to purchase and installation of these. See specific line item in proposal for dimensions. Model EJ 8218 or approved equal.

ITEM 119 – DUCTILE IRON PIPE FITTINGS: Shall be used to furnish and install coated ductile iron pipe fittings, 350 rating in sizes 4-inch - 36-inch diameter.

ITEM 120-143 – VALVES: Shall be used to furnish and install ductile iron valves, 350 rating in sizes 4-inch - 36-inch diameter, in compliance with AWWA Specifications.

ITEM 144-147 – FIRE HYDRANTS: Shall be used to furnish and install breakaway fire hydrants Mueller Super Centurion Model 200 or American Darling Model B84B, or approved equal. Fire hydrants shall be installed with the center of the nozzle 18 inches above finished grade.

ITEM 148 – DE-MUCKING: When unstable soil or unsuitable material is encountered at the proposed sewer elevation, it shall be removed to a depth that is suitable, and replaced with ¾" washed rock (#57 stone) to provide a suitable bedding foundation for the pipe. Work shall include removal and disposal of muck, debris, organic, or other deleterious material. Clean fill shall also be provided under structures to provide a stable base to set structure. The contractor may utilize select on-site excavated material as fill, if determined suitable by the City. The contractor shall be aware that the basis of payment for the work will be the volume of fill or stone hauled-in and installed by the contractor at the unit price bid in the proposal. The contractor and the City's Project Manager shall, agree in advance, on the capacity of each truck delivering fill and or stone. The contractor shall provide the Project Manager with tickets to substantiate the quantities submitted for payment.

ITEM 149 – 12-INCH LIMEROCK: Contractor shall square off existing lime rock base and stabilized sub-base and install 12-inch thickness of lime rock. Lime rock to be installed in 6-inch compacted lifts.

ITEM 150 – ASPHALTIC CONCRETE: Contractor shall saw-cut existing asphalt minimum 1-foot behind new lime rock base. A minimum 1-1/2-inch-thick (or up to 2" if in Collector, County, or State road, or if required to match existing pavement) asphaltic concrete surface shall be installed over the trench area between saw-cuts. Work shall also include application of prime coat or tack coat as applicable.

ITEM 151 – MILLING AND PAVING: Shall be used for milling and paving existing asphalt to a depth of 2-inches.

ITEM 152-153 – MAINTENANCE OF TRAFFIC: Shall be used for traffic control on local city streets and residential roads, county or state road as applicable. Contractor shall provide a traffic control plan prepared by a certified ATSSA certified technician and obtain MOT permit from the City of Fort Lauderdale or regulatory jurisdiction with all required signatories.

ITEM 154-155 – SOD: Shall be used for sod replacement within the work limits. Damaged areas by the contractor's operations, outside the work limits, shall not be paid for under Item 154 or Item

155. St. Augustine "Floritam" shall be used in irrigated areas or when required to match existing turf; Bahia sod shall be used in non-irrigated areas.

ITEM 156 – SHEET PILING: Payment for sheet piling (Z) piles shall be based on square foot of contact area within the supported trench/excavation. Contractor will not be paid for un-driven sheet-piling above the top level of the excavation.

ITEM 157 – FLOWABLE FILL: Flowable fill is an alternative for general backfill or compacted granular fill, to be used dependent on site conditions, as authorized by the City's Project Manager. Fill shall be excavatable type, maximum 100 PSI, 28 day compressive strength and shall conform to FDOT standard Specifications for Road and Bridge Construction, Section 121.

ITEM 158 – STEEL PLATES: Furnish and install temporary traffic bearing plates, 1" x 10' x 20', when required. Include asphalt transition to secure plates in place, remove and haul away upon completion. Unit cost shall be per location.

ITEM 159-165 - RESTORATION: Shall include all labor, materials, accessories, equipment and tools necessary to remove and install concrete sidewalks, curb and gutter, driveways, slabs and crossings. If existing brick pavers are used, Contractor shall remove these by hand, and re-install them once work is completed. If existing cannot be saved, Contractor shall install new ones using the same type as the existing.

ITEM 166-167 - TESTING LABORATORY: Shall be used for compaction and concrete testing to be performed by a certified laboratory, as required by the State/County/City. Contractor shall include soil compaction testing and concrete testing under the pipe installation and restoration items mentioned above. Items 166 and 167 shall only be used when work is not included under items mentioned above.

ITEM 168 to 201 – TIME AND MATERIAL: **TIME AND MATERIAL RATES ARE FOR COMPENSATION RELATED TO WORK NOT COVERED UNDER THE PROPOSAL LINE ITEMS PORTION OF THE CONTRACT. THIS LINE ITEM SHALL BE USED ONLY AT THE AUTHORIZATION OF THE CITY IN ADVANCE OF THE WORK BEING PERFORMED.**
Time and material shall include:

(a) Labor costs, including fringe benefits such as workers compensation, social security, vacation pay, overhead, profit; Line Items 168 – 171 will be utilized for this item.

Labor rates are for the types of classifications normally used in underground utility work. The minimum billing time per workman shall be three (3) hours. Labor rates should represent both direct and indirect costs such as workman's compensation, sick pay, social security, vacation, etc. There will be no additional compensation when work is outside of normal working hours, such as nights, weekends, and holidays.

(b) Equipment costs. Costs shall be the actual time on the job. Rates shall be per the latest edition of the "Rental Rate Blue Book for Construction Equipment"; Line Items 172 - 201 will be utilized for this item.

Equipment rates shall include cost of operator and represent all costs associated with operation of the equipment. Billing for equipment shall be for the time the

equipment is used for productive purposes on the job site. All equipment used shall be in proper working condition. Contractor shall not be paid for equipment downtime caused by breakages, repairs, accidents, etc. Once the piece of equipment has completed its function on the job, its time-on-the-job shall be terminated and not billed. Minimum billing time shall be three (3) hours.

(c) Contractor's markup shall be 5% on the above cost centers, in accordance with Section 14.1 of the Construction Agreement.

The same limitations apply to subcontractor work.

Work performance, manpower, usage of subcontractors, and estimated costs assigned under this item shall be agreed upon in advance between the Contractor and the City's Project Manager. It shall be the contractor's responsibility to notify the City's Project Manager prior to the performance of any facet of work under this item. The contractor shall provide documentation in support of claims for reimbursement, including receipts and invoices for these line items.

# 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 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 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. Provide name, address, and phone numbers of all subcontractors.

B. 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.

C. The Contractor shall provide a Site Health and Safety Plan and Activity Hazard Analysis (AHA) for contaminated soil 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.

D. 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 Engineer.

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 Owner 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 Engineer.

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 Engineer.

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 Engineer 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 Engineer, 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 Engineer 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 Engineer.

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 sewer outfalls shall be protected with floating silt booms as approved by the Broward County Department of Environmental Planning and Protection (BCDPEP) and the Engineer. 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 nonshrink 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

Engineer immediately. Results will be obtained by the onsite mobile laboratory.

B. If analytical testing (by Engineer or Engineer-designated laboratory or subcontractor) documents and indicates elevated concentrations above FDEP action levels (Chapter 62-777, Florida Administrative Code) as verified by the Engineer, 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 Engineer and construction of the remaining sewer pipelines in that area will be installed in the wet or normal construction activities shall be resumed in another areas determined by the ENGINNER. 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 Engineer. 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 Engineer: Granular Activated Carbon (GAC) Treatment Vessels**,** Mobile Air Stripping Units, or Vacuum Truck Removal and Disposal or other method as approved by the Engineer. 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 02260
# EXCAVATION SUPPORT AND PROTECTION

## PART 1 GENERAL (NOT USED)

## PART 2 PRODUCTS (NOT USED)

## PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall be responsible to design, provide, and maintain shoring, sheeting, and bracing as necessary to support the sides of excavations and to prevent detrimental settlement and lateral movement of existing facilities, adjacent property, and completed Work.

3.02 REMOVAL OF EXCAVATION SUPPORT

A. Remove excavation support in a manner that will maintain support as excavation is backfilled.

B. Do not begin to remove excavation support until support can be removed without damage to existing facilities, completed Work, or adjacent property.

C. Remove excavation support in a manner that does not leave voids in the backfill.

3.03 TRENCHES

A. For trench excavation exceeding 5 feet in depth, provide adequate safety system meeting requirements of the Occupational Safety and Health Administration's (OSHA), Trench Safety Standards, 29 C.F.R., S.1926.650, Subpart P, and all subsequent revisions or updates adopted by the Department of Labor and Employment Security.

**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 ENGINEER 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 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 ENGINEER, 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 ENGINEER 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.
   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 over-excavation 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 ENGINEER'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 overexcavate without written authorization of ENGINEER. 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 ENGINEER. 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 with 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 Engineer 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.
5. Manufacturers and Products:
   a. Reef Industries; Terra Tape.
   b. Allen; Markline.

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.
6. Manufacturers and Products:
   a. Reef Industries; Terra "D".
   b. Allen; Detectatape.

C. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities.

| Color[a] | Facility |
|---|---|
| Red | Electric power lines, cables, conduit, and lightning cables |
| 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 Engineer. Engineer will determine depth of overexcavation, if any, required.

## 3.3 TRENCH STABILIZATION MATERIAL INSTALLATION

A. Rebuild trench bottom with trench stabilization material as directed by the Engineer.

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 Engineer.

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 Engineer 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 Engineer, 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 Engineer 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 Engineer 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 Owner 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 Engineer.

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 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, 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 CITY's typical details 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.
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 unless performed specifically at the request of the OWNER.

1.3 WORK INCLUDED

A. This Section covers the Work necessary to replace all pavement, curbs, sidewalks, rock surfacing, and other street features 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 ENGINEER 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 ENGINEER, at no additional cost.

2.6 CONCRETE

A. Concrete shall be 3,500 psi minimum concrete.

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. 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 ENGINEER, crushed limerock, rock screenings, or other suitable material as approved by the ENGINEER.

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 ENGINEER reserves the right to vary the type of resurfacing as best serves the interest of the OWNER. 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 ENGINEER 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.

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 ENGINEER. 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 ENGINEER, 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 ENGINEER as temporary restoration until the final asphalt surface is installed. Additional prime coats will be provided at no cost to the OWNER.

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 STANDARD 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 ENGINEER 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 ENGINEER. 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 ENGINEER.

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 ENGINEER, the CONTRACTOR shall without additional charge, provide the ENGINEER 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 ENGINEER. He shall also provide the ENGINEER 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 ENGINEER 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. The minimum thickness of sidewalks shall be 6 inches. 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 ENGINEER and at no additional cost to the OWNER. 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 ENGINEER, 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 Engineer, 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 Engineer when required to measure small or isolated sections (except where such testing may be considered unnecessary by the Engineer). 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. 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 Owner.

**END OF SECTION**

# SECTION 02656

# MANHOLE REPAIRS

## PART 1 GENERAL

### 1.1 SUMMARY

Section includes: Work required for the various types of manhole repairs to prevent inflow (rainwater entering into manholes through frame/lid and chimney). Materials and methods include sealing manhole chimneys with cured-in-place or prefabricated products and manhole frame/cover sealing/replacement. Chimney seals shall be provided for (i) All manholes where the existing frame is to be removed and either reset or replaced with a new frame (ii) Manhole chimneys where inflow is detected.

A. Related Work Specified Elsewhere includes:

1. Section 02999 – Miscellaneous Work and Cleanup
2. Section 02316 – Excavation
3. Section 02315 – Fill and Backfill
4. Section 02575 – Surface Restoration

### 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 (cured-in-place products)
5. Pot life (cured-in-place products)
6. Application thickness per coat (cured-in-place products)
7. Curing time (cured-in-place products)

### 1.3 QUALITY ASSURANCE

A. Product application shall be performed only by workmen trained and experienced with specified material and trained in confined space entry.

B. Certification: Applicators for spray-applied coating installation shall be certified by the manufacturer.

C. Contractor Experience: Minimum of five (5) years of experience with similar applications of the materials specified.

PART 2 PRODUCTS

2.1 FRAME & COVER

A. Castings for manhole frames and covers shall conform to ASTM A48 Class 30 and shall be traffic bearing.

B. The seating surfaces between frames and covers shall be machined to fit true so the frames and covers do not shift under traffic conditions or permit entry of stormwater from flooding.

C. Lifting or pick holes shall be provided, but shall not penetrate the cover.

D. The words “SANITARY SEWER” and “CITY OF FORT LAUDERDALE” shall be cast in all manhole covers.

E. Manhole frames and covers shall be EJ USA Inc. Product number NPR13-2378B or pre-approved Equal.

F. Two rows of butyl rubber rope mastic shall be applied to the top surface of the manhole chimney or cone (whichever the frame will attach to). The frame shall be carefully set onto the rope mastic so that the frame opening is concentric to the manhole opening.

G. Inflow protectors shall be provided for all manholes. ABS or 316 stainless steel inflow protectors shall be provided for manholes in non-traffic bearing locations. High-quality 316 stainless steel inflow protectors with a consistent thickness of not less than 18 gauge shall be provided for manholes in traffic bearing locations.

H. Inflow protectors shall have a deep dish bowl design with no less than 8 inches in depth to allow easy and unobstructed removal of the manhole cover.

I. Manhole inflow protectors are to be manufactured with a one-piece gasket installed at the factory for a tight, consistent fit. The rubber gasket is to be designed to securely wrap around the entire leading edge of the inflow protector at the point where it comes in contact with the manhole frame and cover.

J. The wrap-around rubber gasket is to be manufactured to a width of no less than 3/8 inches, consistent on top and bottom of the leading edge of the inflow protector. The gasket shall be no more than 3/32 inches thick.

K. The insert removal handle shall be manufactured of high-quality stainless steel for strength and durability. The handle shall be installed in such a way that it does not interfere with the installation or removal of the manhole cover. The handle shall be designed and manufactured to withstand a minimum pull force

of 500 pounds before it fails or separates from the insert.

L. The inscription “PROPERTY OF FORT LAUDERDALE UTILITIES” shall be etched at the base of the handle frame to provide a long-lasting identification marker for the OWNER.

M. Inflow protectors shall be as manufactured by Sewer Shield, Inc., Maitland, FL or pre-approved Equal.

2.4 BENCH AND INVERT

Repair of bench and invert shall be accomplished utilizing either the Raven or IET product in accordance with sections 02958-01 or 02958-02 or cementatius lining material as follows:

A. Specially formulated prepackaged mixes shall be used. The material shall be fiber reinforced and contain special additives which produce a minimum 24- hour compressive strength of 3,000 psi, and a minimum 28-day compressive strength of 8,000 psi. The material shall form a mechanical and chemical bond to the manhole surface and have zero shrinkage.

B. The mortar shall include calcium aluminate or other Engineer-approved substance to be suited for resistance against corrosion.

C. Bench Application:

a. The bench shall be sprayed such that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than ½ inch. The materials shall be applied to the bench area in such a manner as to provide for proper drainage without ponding. The material shall be smooth steel trowel finish sloping from wall to invert. The bench intersection shall be rounded to a uniform radius the full circumference of the intersection.

D. Invert Repair:

a. Invert repair shall be performed on all inverts with visible damage or infiltration as identified by the OWNER. After blocking the flow through the manhole and thoroughly cleaning the invert, a quick-setting patch mix shall be applied to the invert in an expeditious manner. The mix shall be troweled uniformly onto the invert, extending out onto the bench sufficiently to tie into the liner spay applied to the bench or to the existing manhole bench. The finished invert shall be U-shaped uniform with pipe diameter with a minimum depth or 6” for 8” pipe and full depth for greater sized mains. Finish is to be that accomplished by steel trowel. Pipe crowns are to be built on all pipes. Invert shall be at least 2” thick, and be smooth and free of ridges.

E. Curing:

a. Material shall be cured according to the manufacturer’s instructions and

recommendations

b. Caution should be taken to minimize exposure of applied product to sunlight and air movement. At no time should the finished product be exposed to sunlight or air movement for longer than 15 minutes curing the curing process before replacing the manhole cover.

3.0 WARRANTY

A. Provide a ten (10) year unlimited warranty on all workmanship and products. The work covered by the warranty shall include surface preparation, grouting, liner application, as well as other work performed under this section. The warranty shall be effective beginning on the date of final acceptance by Lee County Utilities, and shall guarantee that the manhole will be protected from leaks and from failure due to corrosion from exposure to hydrogen sulfide and other corrosive chemicals normally encountered in raw sewage.

**END OF SECTION**

# SECTION 02676
# LEAKAGE TESTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Testing for any signs of leakage in all rehabilitated gravity sewers by hydrostatic testing using infiltration / exfiltration methods.

B. Operation of Existing Facilities: Conduct all tests in a manner to minimize as much as possible any interference with the day-to-day operations of existing facilities.

### 1.2 PERFORMANCE REQUIREMENTS

A. Written Notification of Testing: Provide written notice when the work is ready for testing, and make the tests as soon thereafter as possible.

1. Personnel for reading meters, gauges, or other measuring devices, will be furnished.

2. Furnish all other labor, equipment, air, water and materials, including meters, gauges, smoke producers, blower, pumps, compressors, fuel, water, bulkheads and accessory equipment.

### 1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

B. Testing Report: Prior to placing the sewer system in service submit for review and approval a detailed bound report summarizing the leakage test data, describing the test procedure and showing the calculations on which the leakage test data is based.

1. The length and diameter of the section of line tested (MH to MH) including any laterals.

2. A complete description of test procedures and methods, including type of plugs used and where, depth of sewer, ground water pressure over sewer pipe, and amount of leakage measured.

3. The name of the inspector/tester and the date(s) and time(s) of all testing, including any retesting.

4. A description of any repairs made.

## PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

### 3.1 INFILTRATION/EXFILTRATION TEST FOR GRAVITY SEWER

A. The allowable limits of infiltration or exfiltration for the entire system, or any portion thereof, shall not exceed a rate of 50 gallons per inch of inside pipe diameter per mile of pipe per 24 hours.

B. No additional allowance shall be made for house service lines. Any part of or all of the system shall be tested for infiltration or exfiltration, as directed by the ENGINEER or as required by the CITY.

C. The procedures and limitations for conducting infiltration/exfiltration tests shall be established at the pre-construction conference on a project-by-project basis.

D. All testing shall be run continuously for 24 hours, unless the OWNER's REPRESENTATIVE can visually verify that this test duration is not required due to the observed infiltration/exfiltration rate.

E. The amounts of infiltration or exfiltration shall be determined by pumping water into or out of calibrated drums, or by other methods approved by the ENGINEER and the COUNTY, such as in-line V-notch weirs.

F. Infiltration: Prior to testing for infiltration, the system shall be pumped out so that normal infiltration conditions exist at the time of testing. The cumulative results of the entire collection system results shall not be a satisfactory method for gauging infiltration compliance. Each sewer section between manholes must permit infiltration no greater than the maximum allowable, as specified above.

G. Exfiltration: The exfiltration test, when required due to groundwater levels, will be conducted by filling the portion of the system being tested with water to a level 2 feet above the uppermost manhole invert or 1 foot above the pipe crown, whichever is greater, in the section being tested. The cumulative results of the

entire collection system results shall not be a satisfactory method for gauging exfiltration compliance. Each sewer section between manholes must permit exfiltration no greater than the maximum allowable, as specified above.

H. Where infiltration or exfiltration exceeds the allowable limits specified herein, the CONTRACTOR shall, at his own expense, determine the source of leakage. He shall then repair or replace all defective materials and/or workmanship at no additional cost to the CITY until a satisfactory test is achieved.

I. If the defective portions cannot be located, remove and reconstruct as much of the work as is necessary in order to conform to the specified allowable leakage limits.

J. All visible leaks shall be repaired regardless of the amount of leakage.

K. Provide all labor, equipment and materials required and conduct all testing required under the direction of the OWNER's REPRESENTATIVE.

**END OF SECTION**

# SECTION 02750
# WASTEWATER FLOW CONTROL

## PART 1 GENERAL

### 1.1 SCOPE OF WORK

A. The work specified in this section includes all labor, materials, accessories, equipment and tools for performing all operations required to bypass pump sewage around a manhole or sewer section in which work is to be performed. The contractor shall be prepared to bypass pump sewage as a part of his operations.

B. The contractor shall provide all pumps, piping, and other equipment to accomplish this task; perform all construction; obtain all permits; pay all costs; and perform complete restoration of all existing facilities to equal or better condition to the satisfaction of the owner.

### 1.2 GENERAL

A. When sewer line flows at the upstream manhole of the line being repaired are above the maximum allowable requirements for television survey, or do not allow the proper sewer or manhole repair, the flows shall be reduced to the levels indicated by one of the following methods: manual operation of pumping stations by owner forces, by the contractor plugging/blocking of the flows, or by the contractor pumping/bypassing of the flows as acceptable to the owner.

B. For the initial television survey, before and after any repair with the exception of joint testing and sealing, the sewer line shall be blocked completely. No flow, except infiltration/inflow, will be allowed through the respective sewer line being televised on the pre-repair television survey, and the post-repair television survey.

C. For all other television surveys, including warranty surveys and joint testing and sealing operations, the depth of flow within the sewer shall not block the camera inspection.

D. When sewer line flows at the upstream manhole of the line being repaired, in the opinion of the owner, are too excessive to plug while the rehabilitation is being performed, the contractor shall submit a written plan and pump/bypass the flow as acceptable to the owner.

### 1.3 SUBMITTALS

A. The contractor shall submit complete, detailed plans for this aspect of the work to the owner for review.

### 1.4 PUMPING AND BYPASSING

A. When pumping/bypassing is required, as determined by the owner, the contractor will supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the manhole section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flows plus additional flow that may occur during periods of rain storms. “Lay flat” hoses shall be used whenever possible. “Hard Pipe” hoses may be permitted upon agreement with the OWNER that site conditions require the use of such. The contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. A "setup" consists of the necessary pumps, conduits and other equipment to divert the flow of sewage around a manhole section, from the start to finish of work performed in the manhole section.

B. Pumps and equipment shall be continuously monitored by the contractor.

1. Pumps. Any sump pumps, bypass pumps, trash pumps or any other type pump which pulls sewage/water or any type of material out of the manhole or sewer shall discharge this material into another manhole, or appropriate vehicle or container acceptable to the owner. Under no circumstances shall this material be discharged, stored or deposited on the ground, swale, road or open environment.

2. Traffic Control. The contractor shall take appropriate steps to ensure that all pumps, piping and hoses that carry raw sewage are protected from traffic. Traffic control shall be performed by the contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**END OF SECTION**

# SECTION 02758
# SANITARY SEWER DOUBLE WYE SERVICE CONNECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The work specified in this Section includes repairs to sections or segments (up to 20 feet) of existing sanitary sewers service lines, which require excavation from the surface to accurately locate existing staggered wye connections and to replace them by making necessary repairs.

1.2 GENERAL

A. Generally, double service connection replacements are made at specific locations and involve relatively short lengths of sewer and fittings (up to 20 feet) which are to be repaired or replaced. "Isolation" of affected reaches of sewer by plugging and/or bypass pumping, if required, shall be performed as specified in Section 02750 - Wastewater Flow Control.

B. Locations where double service connections are to be made will be made available to the CONTRACTOR through Work Orders and will be based on previously performed television surveys.

C. After the designated repairs have been made, the CONTRACTOR will test them as described in this Section of these Specifications. The costs of testing will be borne by the CONTRACTOR. If a repaired joint or section should prove to be defective, the CONTRACTOR shall re-perform the work at no additional cost to the OWNER and shall also be responsible for the costs of any retesting required by the OWNER.

D. Where work is to be performed on private property, the CONTRACTOR shall consult with the OWNER who will make arrangements and schedules with the property owners before the CONTRACTOR performs the work.

E. Excavation, backfill, exploratory excavation, sheeting and shoring, dewatering, conflicts with other utilities, and miscellaneous work shall conform to the requirements of Section 02316 – Excavation and 02315 – Fill and Backfill.

PART 2 - PRODUCTS

PART 3 EXECUTION

3.1 PROCEDURES

A. The double service connection replacement procedures shall be as follows:

1. Site preparation shall be performed as described in Division 2. When the repairs are to be made on sewers or facilities lying under paved surfaces,

those surfaces shall be removed to the limits specified for point repairs of the particular size pipe involved (trench width plus two feet for concrete surfaces) unless otherwise acceptable to the OWNER.

2. The CONTRACTOR shall excavate and backfill in accordance with Section 02316 – Excavation and Section 02315 – Fill and Backfill. Under no circumstances shall the CONTRACTOR be allowed to remove concrete or asphalt without prior cutting. The saw cutting shall be deep enough to produce an even, straight cut.

3. Dewater, sheet and or brace all excavations in accordance with Section 02316 – Excavation and Section 02315 – Fill and Backfill. Well points, pumps, sheeting, bracing and/or sock drain shall be used to provide a safe, dry, open hole for all repairs or replacements specified herein.

4. Excavate down to the pipe, completely exposing the least footage of pipe necessary to locate and replace both existing staggered wyes.

5. After the staggered wyes are located and exposed, CONTRACTOR shall make recommendation and the OWNER will identify the method of replacement. One or a combination of the following methods shall be used:

   a. Remove and replace section(s) of pipe and fittings. Remove section(s) of defective pipe or fitting by cutting on each side along lines perpendicular to longitudinal axis of pipe so as to leave "spigot ends" to be connected to replacement pipe. Cut or fabricate replacement section. Make connections using stainless steel shear rings or approved equal. Bedding or embedment shall be placed and compacted. Reconnect to service line . As a minimum, a total of six (6) feet of piping shall be replaced by the CONTRACTOR.

      CONTRACTOR shall:

      (1) Determine the exact location of the wyes by means of television inspection with an electronic locating device (sonde).

      (2) If roots are encountered inside the lateral being repaired, a minimum of 15 feet of lateral shall be replaced.

      (3) A cleanout shall be installed at or near the property line on each leg of the wye (see detail S216).that location in both the back yard and front yard easements.

      (4) Where the OWNER has indicated a fused-on saddle, sewer service connections shall be joined to the fold-and-formed pipe by means of an electrofusion sewer saddle as manufactured by Central Plastics Company, or approved equal. The installation of the saddle shall be done in

accordance with manufacturer's recommended procedures. The outlet shall be gasketed, sized for ASTM D 3034 SDR 35 PVC pipe. The fusion of the saddle base must be achieved by input of 40 volts of current supplied by a micro-processor manufactured by Central Plastics Company, or approved equal.

7. The adequacy of the double wye service connection in sewer laterals shall be demonstrated by the CONTRACTOR by testing. Testing of services may be accomplished by one of two alternate methods, depending on the depth of the line and the difference in elevation of the pipe at the ends of the reach. Smoke testing shall be used if the pipe slope exceeds one percent. Testing shall be performed while dewatering is continued and before backfilling.

   a. Smoke-Testing. The reach of sewer in which the repair (or repairs) has been made shall be isolated by plugging the upstream and downstream manholes as necessary not only to temporarily eliminate the flow of sewage through it but also to prohibit the smoke from entering other reaches of sewer. Smoke shall then be introduced into one of the manholes and into the reach using smoke bombs and a blower especially designed or adapted for smoke testing sanitary sewers and acceptable to the OWNER. The repaired area shall then be observed for the emergence of smoke for a period of 15 minutes. If none can be seen, the repair will be deemed to have passed the test.

   b. Exfiltration-Testing: This method may be used only on sewers laid on grades less than 1.00 percent. Water, colored with a bright-colored dye acceptable for usage in testing, is introduced into the pipe so as to impose a 2-foot static head over the top of the pipe at the point of repair when the pipe in the lower manhole is plugged. Observations shall then be made by the OWNER to determine if leakage of the colored water occurs at the repair point. Care shall be taken, when this method is used, that:

      (1) Not more than 4-feet of static head are induced on the main at the lower end of the reach, and

      (2) No back-up problems are caused in service lines.

8. Complete placement and compaction of backfill.

9. Restore surface features to at least as good condition as existed before construction began, including roadways, driveway and walks.

**END OF SECTION**

# SECTION 02759
# SANITARY CLEANOUT

## PART 1 GENERAL

### 1.1 SCOPE

A. This Section consists of excavating a section of the existing sewer lateral pipe between mainline and the property line, and furnishing, installing, testing and placing in operation new sewer service cleanout piping, complete in its place, with fittings, and other appurtenances required for a complete installation. This section may include a Double Wye replacement where designated.

B. This Section consists of installing a Vac-a-Tee or approved equivalent on the existing lateral pipe at an approved location to create a clean out with minimal surface restoration.

### 1.2 GENERAL INFORMATION AND DESCRIPTION

A. The pipe and fittings covered by these specifications shall be furnished by fully qualified manufacturers experienced in the fabrication, casting and manufacture of the pipe materials specified herein. The pipe and fittings shall be designed, fabricated and installed in accordance with the best practice of the trade and the standards specified herein.

B. Portions of existing sanitary sewer service lines shall be excavated to install a cleanout or replace a double wye where approved. Where necessary and directed by the owner, the contractor is to remove test tees, roots, double wye's or defective pipe as required within the area of a cleanout installation. A cleanout installation "area" is to include up to 5' of lateral pipe replacement.

C. Replacement pipe at the property line including cleanout as approved by the owner per owner's minimum standards shall be the same size.

D. The contractor may furnish as an alternate to traditional excavation, vacuumed excavation with a snap-on sewer saddle. Vac-A-Tee or approved equal where approved by the owner.

E. The contractor shall submit shop drawings for all materials, couplings, fittings, pipe, clean out boxes, concrete pads or any other item required for the cleanout installation.

F. The contractor shall furnish all labor, tools, materials, and equipment necessary for installation and jointing of the pipe. All piping shall be installed in accordance with the contract documents in a neat workmanlike manner and shall be set for accurate line and elevation. All piping shall be thoroughly cleaned before installation, and care shall be taken to keep the piping clean throughout the installation, no foreign material is to be allowed to enter the system.

G. The existing laterals shall be hand excavated to a joint, saw cut, clean and square and the appropriate adapter installed to connect the replacement laterals. Care shall be taken to maintain the slopes of the existing laterals.

H. The contractor is to maintain traffic so that it causes minimal disruption to the public. Any road closure or work in the public right of way will require an approval prior to work commencing.

PART 2 PRODUCTS

2.1 PIPE-TO-PIPE CONNECTIONS

A. Pipe-to-pipe connections shall be made by using stainless steel shear rings as manufactured by Fernco, or approved equal.

PART 3 EXECTUION

3.1 GENERAL

A. After the site has been located for a particular cleanout installation which is to be installed, operations shall progress generally as follows:

1. Call for locations of existing utilities, Sunshine State One-Call, 811. No excavations are to be done without proper locations.

2. Take photographs of the area prior to the excavation and after the excavation and restoration is completed. The photographs will be used in case there is a discrepancy in the restoration required.

3. Carefully remove or protect surface features in work area. Excavate to completely expose the existing pipe, taking adequate precautions not to disturb any other existing underground facilities and handling excavated materials in a manner that will not cause further restoration.

4. The section or reach of pipe being worked on shall be isolated by plugging and/or by-pass pumping where necessary. There is no payment for bypass pumping for this section of work any bypassing required Is to be include in the bid item for cleanout installation.

5. Remove and dispose of the existing pipe as necessary, no foreign materials are to be backfilled in the trench.

6. The trench bottom shall be overexcavated a minimum of 8-inches and new embedment material to go beneath the pipe placed and shaped so as to form uniform support for the pipe barrel and newly installed cleanout piping.

7. Pipe shall be installed in accordance with the manufacturer's recommendations and to the grade and slope as its existing condition. Pipe shall be installed and jointed, normally beginning at its low or outlet end and proceeding upstream, with the bell ends facing upstream toward the direction of flow. Complete embedment or encasement and place compacted backfill as necessary to avoid pipe settlement during backfilling or compaction. Any pipe connection found to be leaking, offset, improperly cut or aligned will be re-excavated and replace at no additional charge to the owner.

8. Perform leakage test if requested. When this has been successfully completed and acceptable to the owner, remove temporary plugs and reconnect wyes or tees to service lines.

9. Complete placement and compaction of backfill.

10. Restore surface features to at least as good condition as existed before construction began, including roadways, driveways and walks.

11. Excavated cleanouts, restoration items, sod, asphalt or concrete. These items are limited to a maximum of 5' x 5' restoration area. For excavations deeper than 5-feet the restoration area will increase by 1-foot for each additional foot of excavation depth beyond 6-feet. Payment for restoration items will not exceed the dimensions of the existing item being restored. Actual field measurements will be paid up to the preceding maximum dimensions. The contractor is directed to adjust his restoration items to include the "limits of construction" restrictions, any restoration required outside of these limits will be considered the contractors responsibility unless approved by the owner in writing prior to restoration work.

**END OF SECTION**

# SECTION 02957
# SEWER MANHOLE REHABILITATION

## PART 1 GENERAL

### 1.1 DESCRIPTION

A. Section includes requirements for repair and rehabilitation of sanitary sewer manholes.

### 1.2 QUALITY ASSURANCE

A. Follow national standards and as specified herein.

B. Contractor's personnel involved in installation of materials: Certified by manufacturer that they have successfully completed training in handling, applying and finishing materials used.

C. Contractor: Inspecting pre-rehabilitation work, rehabilitation operations, and post-rehabilitation work.

D. For a product to be considered commercially proven, a minimum of 1,000 vertical linear feet of manhole rehabilitation must have been completed over a period of at least 3 years with the material proposed, by the Contractor or by other contractors.

1. Submit description of each project including material used, vertical linear feet of manhole rehabilitated and owner's contact information.

### 1.3 SUBMITTALS

A. Submit:

1. Grout, Cementitious Reconstruction, Patching Materials, Chimney Seals, Manhole Liners.

a. Material type and manufacturer to be used, including catalog data showing manufacturer's clarifications and updates, ASTM references, material composition, specifications, physical properties and chemical resistance, manufacturer's recommended mix, additives and set time.

b. Manufacturer's detailed description of recommended procedures for handling and storing material to include use of strip recorder to monitor temperature at storage location.

c. Manufacturer's detailed description of processes to execute the use of material including equipment required.

d. Detailed description of field testing processes and procedures.

e. Certification: Backup equipment is available and deliverable to project sites within 24 hours.

f. Shipping manifest:

1) Date shipped.
2) Origination and delivery locations
3) Shipping method and carrier
4) Shipping order number
5) Purchase order number
6) Shipped item
7) Stock number
8) Lot number
9) Manufacturer
10) Any shipping, storage, or safety requirements, including MSDS documents
11) Received by, and date
12) Signature of receiver

2. Shop drawings and manufacturer's installation requirements for internal rubber sleeve chimney seals.

3. Bypass pumping plan.

   a. Intake manhole
   b. Service over pumping
   c. Receiving manhole
   d. Expected flows
   e. Pump size
   f. Pipe layout
   g. Backup equipment
   h. Procedures to monitor upstream mains for backup impacts
   i. Procedures for setup and breakdown of pumping operations

4. Emergency plan detailing procedures to be followed in event of pump failures, sewer overflows, service backups, and sewage spillage.

   a. Maintain copy on site for duration of project.

B. Submit:

1. Certified statement from manufacturer that Contractor is approved installer of the material or system with certificates of training for each crew member involved in each process from manufacturer.

   a. Documentation for products and installers must be approved by Contract Manager before installation of material.

2. For each manhole rehabilitated, complete and accurate record of work completed.

   a. Show identifying number and location, quantities of rehabilitation material used, estimate of infiltration/inflow eliminated, and results of post-rehabilitation inspection.

3. Field test reports.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect, store, and handle during transportation and delivery, while stored on-site, and during installation following approved submittals.

1. Maintain temperature less than 120 degrees Fahrenheit while in storage.

B. Material Found to be Defective or Damaged Due to Manufacture or Shipment.

1. Repair following manufacturer's recommendations if Contract Manager deems repairable.

2. Material not deemed repairable: Rejected, removed from Project site, and replace at Contract Manager's direction.

**PART 2 PRODUCTS**

2.1 MATERIALS

A. Acrylic or Acrylate Base Grout.

1. Two-part grout mixed at point of injection.

2. Minimum 25 percent acrylic or acrylate base material by volume.

a. Use higher concentration of base material at Contract Manager's direction to increase strength or offset dilution during injection period.

3. Controllable reaction time: 10 seconds to 1 hour.

4. Viscosity: 1.5 centipoise water.

a. May increase viscosity to no more than 2.5 centipoise water, at Contract Manager's direction.

b. Remain constant throughout injection period.

5. Tolerates dilution and reacts in moving water.

6. Final reaction:

a. Continuous irreversible, impermeable, non-porous still gel in pure form.

b. Stabilized soil in ground that will not become brittle or rigid.

7. Gel does not bleed water under stress.

8. Dehydrated gel returns to 90 percent of its original volume and form after prolonged period of low ground water.

9. Do not use catalyst containing dimethyl amino propionitrile (DMAPM).

10. Use root inhibitor (50% active dichlobenil) when roots are present in manholes.

11. Use Latex additive for increased tensile strength.

12. Tinted to allow detection of grout in drill holes or at leakage locations.

13. Approved Manufacturers.

    a. Grout:

        1) Avanti International, AV 118 Duriflex
        2) De Neef, Inc., AC400
        3) Or Equal

    b. Root Inhibitor:

        1) Avanti, Norosac AC 50W
        2) Or Equal

    c. Latex Additive:

        1) Avanti, AV-257 Icoset
        2) Or Equal

B. Urethane Base Grout.

1. Ratio: One part urethane prepolymer to 1 to 10 parts water by volume (10 to 50 percent prepolymer).

2. Liquid prepolymer:

    a. Solids content: 77 to 83 percent.
    b. Specific Gravity: 1.04
    c. Flash Point: 20 degrees Centigrade
    d. Viscosity: 200 to 1,200 centipoise at 70 degrees Fahrenheit

3. Water for reacting prepolymer: pH of 5 to 9
4. Use gel control agent to control cure time as required

5. Final Reaction:

a. Chemically stable, non-biodegradable, flexible gel, impermeable to water at pressures up to 15 psi.

6. Use root inhibitor (50 percent active dichlobenil) when roots are present in manholes.

7. Use Latex additive for increased tensile strength.

8. Tinted to allow detection of grout in drill holes or at leakage locations.

9. Approved Manufacturers:

a. Grout:

1) 3M Corporation, Scotch-Seal 5610
2) De Neef, Inc., Hydroactive Multigel NF
3) Avanti International, AV 350
4) Or Equal.

b. Root Inhibitor:

1) Avanti, Norosac AC 50W
2) Or Equal

c. Latex Additive:

1) Avanti, AV-257 Icoset
2) Or Equal

C. Cementitious Reconstruction for Manhole Restoration.

1. Quick setting, high strength, corrosion resistant cementitious material

2. Suitable for rotary spray application to inside of manhole
3. Use additives to increase corrosion resistance or bond strength at manufacturer's direction and with Contract Manager's approval.
4. Initial set time per manufacturer's recommendation and per project conditions.
5. Density when applied: 135 lb/cf +/- 5 lb/cf

6. Compressive strength 9ASTM C109) at 1 day:
   a. Per manufacturer's recommendation
   b. Minimum acceptable for "or equal" products: 2,800 psi

7. Compressive strength (ASTM C109) at 28 days:
   a. Per manufacturer's recommendation
   b. Minimum acceptable or "equal" products: 5,800 psi

8. Bond Strength (ASTM C882) at 28 days:
    a. Per manufacturer's recommendation
    b. Minimum acceptable "or equal" products: 1,640 psi

9. Flexural Strength 9ASTM C78) at 28 days:
    a. Per manufacturer's recommendation
    b. Minimum acceptable "or equal" products: 1,500 psi

10. Shrinkage (ASTM C596) at 28 days: 0 percent

11. Approved Manufacturers:
    a. IPA Systems, Inc., Octocrete
    b. The Strong Company, INc., Strong-Seal
    c. AP/M Permaform, Permacast MS-10,000 or CR-9,000
    d. Sauereisen, F-120 Underlayment
    e. QuadEx Aluminaliner
    f. Or Equal

D. Hydraulic Water Plugs.
1. Rapid setting hydraulic water plug to plug active leaks prior to other rehabilitation work
2. Initial Set Time at 70 degrees Fahrenheit: 60 to 90 seconds
3. Final Set Time at 70 degrees Fahrenheit: One hour

4. Compressive Strength 9ASTM C109) at 28 days:
    a. Per manufacturer's recommendation
    b. Minimum acceptable "or equal" products: 4,000 psi

5. Length Change (ASTM C157): 0 percent

6. Approved Manufacturers:
    a. Saureisen, Instaplug F-180
    b. IPA Systems, Inc., Octoplug Plus
    c. The Strong Company, Inc., Strong-Seal Strong-Plug
    d. AP/M Permaform, Permacast-Plug
    e. Or Equal

E. Oil-free Oakum Water Plugs.
1. Rapid setting oil-free oakum and hydrophilic grout to plug active water leaks prior to other rehabilitation work
2. Oil-free oakum meeting Federal Specification HH-P-117
3. Two-part urethane resin

4. Initial set time: 5 to 10 minutes.
    a. Use accelerator to decrease initial set time

5. Approved Manufacturers:
   a. Avanti International, Oil-free Oakum (AV-219) and Multigrout (AV-202)
   b. DeNeef, Inc., Oil-free Oakum and Hydro Active Sealfoam or Hydro Active Flex LV grout
   c. Or Equal

F. Manhole Chimney Seals.
1. Elastomeric hand applied lining or flexible internal rubber sleeve and appurtenances.

2. Elastomeric liner.
   a. Two part urethane-based elastomer
   b. Initial set time at 70 degrees Fahrenheit: One hour
   c. Minimum thickness: 125 mils.
   d. Tensile strength (ASTM D638): 54 lb/sq. in

3. Internal Rubber Sleeve.
   a. Extruded or molded from high grade rubber compound following ASTM C923
   b. Minimum Tensile Strength (ASTM D412): 1,500 psi
   c. Maximum Compression set: 18 percent
   d. Hardness (durometer): 48 +/- 5
   e. Minimum thickness: 3/16 inch
   f. Sealing fins for watertight seal against manhole chimney
   g. Top and Bottom Expansion Bands: 16 gauge Type 304 stainless steel, minimum width of 1-3/4 inches

4. Approved Manufacturers:
   a. Internal Rubber Sleeve.
      1) Cretex Specialty Products, Manhole Chimney Sleeve
      2) NPC, FlexRib Manhole Frame-Chimney Seal
      3) Or Equal

   b. Elastomeric Liner.
      1) Sauereisen, Manhole Chimney Seal F-88
      2) Or Equal

G. Manhole Liners.
1. Cured in Place Liners.
   a. Multiple structural layers of fiberglass with non-porous membrane layer between fiberglass, or Polyvinyl Chloride/Polyester (PVCP) liner with a fiberglass layer, bonded to manhole under pressure and heat.
   b. Liner fabricated to match manhole dimensions for custom fit.

   c. Epoxy resin.

1) Polyamide Bisphenol “A” Epichlorodhydrin for use with fiberglass lines
2) Modified epoxy resin for use with PVCP liner

d. Approved Manufacturers:
1) Terre-Hill, Multi-Plexx Liner System
2) Poly-Triplex Technologies, Poly Triplex Liner System
3) Or Equal

2. Spray on Epoxy Liners.
a. Two or 3 part epoxy to protect concrete and steel from chemical attack.

b. Minimum thickness
1) Spray on epoxy: 60 mils.
2) Rotary spray on epoxy: 125 mils.

c. Tensile Strength (ASTM C307): Minimum 2,500 psi
d. Flexural Strength (ASTM C580): Minimum 4,600 psi
e. Working time at 70 degrees Fahrenheit: 30 minutes
f. Initial set time at 70 degrees Fahrenheit: 17 hours

g. Approved Manufacturers:
1) Sauereisen, Sewer Gard No. 210, No. 210S or No. 210RS
2) Raven, Raven 400S
3) Terre Hill, Hydropoxxy
4) AP/M Permaform, Cor+Gard
5) SprayRoq, Inc., Spray Wall
6) Or Equal

3. Concrete Protective Liners.
a. High density Polyethylene (HDPE) concrete protective liner.
1) Integrally extruded with anchoring studs, minimum 39 studs per square foot
2) Minimum thickness of liner sheet with anchoring studs: 2 mm
3) Minimum thickness of flat liner sheet at joint overlaps: 3 mm
4) Joints sealed using thermal welding
5) Density (ASTM D792): 0.945 gm/$cm^3$
6) Elongation at Break (ASTM D638): Greater than 400 percent
7) Minimum abrasion resistance (ASTM D4833): 160 pounds

8) Steel profiles for mounting liner.
a. Maintain minimum 2.5 inch annular space when filling with flowable concrete
b. Maintain minimum 1 inch annular space when filling with grout
c. Anchor bolts: minimum penetration of concrete on manhole wall: 1.5 inches
d. Countersink screws to mount liner to profiles

9) Cement in annular space.
   a. Minimum Compressive Strength: 4,000 psi at 28 days
   b. Minimum aggregate size: 8 mm
   c. Maximum aggregate size: 32 mm

10) Grout in annular space
   a. Minimum Compressive Strength: 6,000 psi at 28 days
   b. Low viscosity, high flowability to fill annular space without voids
   c. Bonds to manhole wall

11) Approved Manufacturers:
   a. AGRU, Sure Grip Concrete Protective Liner
   b. Or Equal

b. Polyvinyl Chloride (PVC) Sheet Liner.
   1) Resin: Minimum 99 percent PVC by weight
   2) Do not use copolymer resins or recycled materials
   3) Minimum thickness: 1.65 mm, with integrally extruded anchoring extensions on maximum 2 inch center and minimum ¼ inch deep.
   4) Joints sealed using thermal welding
   5) Tensile Strength (ASTM C307): Minimum 2,200 psi
   6) Elongation at Break (ASTM D638): 200 percent minimum
   7) Mastic primer and 2-part mastic to seal liner to manhole walls

   8) Approved Manufacturers:
      a. Ameron, Arrow-Lock
      b. Or Equal

4. Cast in Place Concrete Liner.
   a. Formed in place seamless concrete manhole within the existing manhole, extending from bench to frame.
      1) Structurally independent of existing manhole structure

   b. Concrete.
      1) Type I/II Portland cement concrete
      2) Maximum Aggregate Size: 5/8 inch
      3) Fiber reinforcement and plasticizers to produce minimum compressive strength of 4,000 psi at 28 days

   c. Formwork:
      1) Segmented forms in cylindrical and conical sections
      2) Allow adequate annular space for concrete

3) Result in minimum finished manhole opening of 20 inches
4) Sealed at bench and pipe openings to form water stop
5) Removable from within new cast concrete manhole wall

d. When specified, provide PVC or polyethylene liner on new interior manhole wall surface.
1) Minimum thickness: 0.065 inch

2) Ribbed or studded for embedment into concrete
a. Minimum pull out strength: 100 pounds per linear inch.

3) Fit securely to exterior of concrete forms
4) Heat fuse or extrusion weld seams

e. Approved Manufacturers:
1) AP/M Permaform, Permaform Liner
2) Or equal

H. Precast Concrete Manholes: See Section 03400 and Section 02530.

I. Manhole Frames and Covers: See Section 02530.

## PART 3 EXECUTION

### 3.1 PUBLIC NOTIFICATION

A. Maintain service usage throughout duration of project.
1. Maximum amount of time of no service: 8 hours for any property served by sewer.
a. Any service out longer than 8 hours will be bypassed to a sanitary sewer.

2. Public Notification Program.
a. Deliver written notices to each home or business 48 hours before commencement of work being conducted on section, including local telephone number of Contractor contact for inquiries or complaints.
b. Provide owner or occupant a summary of work to be completed, and time and duration of service interruption to building.
c. Contact any home or business that cannot be reconnected within time stated in written notice.
d. Fax or email copies of all delivered notices to Contract Manager.

### 3.2 MANHOLE PREPARATION

A. Sewer Bypass Pumping

B. Clean interior surfaces of manhole of debris, dirt, oil, grease, remains of old coating materials, and any other extraneous materials following approved submittals for rehabilitation products used.
C. Pressure wash manhole walls to remove loose mortar, concrete, debris following approved submittals for rehabilitation products used.
D. Repair irregularities in manhole following approved submittals for rehabilitation products used.
E. Repair leakage in manhole following approved submittals for rehabilitation products used.
F. Trim and grout incoming laterals and pipes following approved submittals for rehabilitation products used.

G. Remove debris from manhole and sewer.
   1. Handle cleaning water in closed discharge hoses to prevent water and residue from causing damage.

   2. Do not discharge debris through sanitary sewer system
   3. Filter solids-laden water through an approved desilting device
   4. Dispose of residue from cleaning and other construction operations in a manner satisfactory to Contract Manager and authority having jurisdiction over area where work site is located.

## 3.3 GROUTING

A. Provide 48 hour notice to Contract Manager prior to start of work for equipment inspection.
   1. Allow measurements to be taken
   2. Demonstrate acceptable grout volumetric measuring technique

B. Adjust chemical mixing ratios required for specific application.
   1. Minimum gel time 30 seconds or at Contract Manager’s direction

C. Do not block pipes entering/exiting manhole with grout
   1. Use mirror or camera to confirm pipes are not blocked
D. Do not damage manhole structure during operations.
   1. Repair damage at Contract Manager’s direction.

E. Protect area of manhole below repair work.
   1. Do not allow solid material to enter sewage flow
   2. Remove protective devices as soon as practicable

F. Manhole Sealing.
   1. Following ASTM F2414 and specified herein
      a. Do not use curtain grout sealing around brick manholes
      b. Drill only the amount of holes necessary to stop leakage
      c. Seal manhole base when specified.

1) Drill holes and inject grout through manhole base.

G. Cementitious Reconstruction.
1. Mix and handle following approved submittals.
2. Apply coating materials using rotary spray equipment or spray gun following approved submittals.

3. Apply beginning at the top of the manhole and work down to bench
   a. Seal around pipe connections and steps

4. Do not allow solid material to enter sewage flow

5. Apply thickness following approved submittals
   a. Minimum total thickness: ½ inch

6. Trowel and brush finish following approved submittals

7. Cure following approved submittals.
   a. Use curing compound when recommended by manufacturer
   b. Do not allow flow in manhole or traffic over manhole, until manufacturer's minimum cure times have been achieved.

H. Hydraulic Water Plugs
1. Provide mechanical key by undercutting or square cutting the opening and removing loose materials following approved submittals
2. Mix, handle, place and cure following approved submittals
3. Furnish surface following approved submittals and as required for other rehabilitation work.

I. Oil-free Oakum Water Plugs.
1. Saturate oakum with resin following approved submittals
   a. Use additives as required

2. Place and cure following approved submittals

J. Manhole Chimney Seals.
1. Provide smooth circular surface for internal rubber sleeve following manufacturer's requirements
   a. Install following Standard Details
   b. Realign manhole frame and cover if required

2. Mix, handle, apply and cure elastomeric lining following approved submittals.

K. Manhole Liners.
1. Cured in Place Liners.
   a. Custom fabricate liner to individual manhole dimensions

1) When finished, liner forms a monolithic structure from the manhole frame to the bench.

b. Line bench area with material placed in the bottom of the manhole and extending a minimum of 6 inches up to the manhole wall
c. Remove manhole steps
d. Saturate liner with resin, place into manhole, pressurize with air or water and cure with hot water, steam or hot air following approved submittals.
e. Finish liner following approved submittals.

2. Epoxy Liners.
   a. Mix and apply following approved submittals
   b. Sagging of epoxy coating not permitted
   c. Seal around pipe connections and steps
   d. Cure following approved submittals

3. Concrete Protective Liners.
   a. Remove manhole steps

   b. Liner attached to wall using supports.
      1) Insert liner sheet into manhole and support following approved submittals
         a. Apply bonding agent compatible with grout or concrete to manhole wall before placing liner
         b. Provide adequate annular space between liner sheet and manhole wall to allow placement of concrete or grout
         c. Secure liner supports to manhole walls
         d. Secure liner to supports
         e. Form liner seams following approved submittals

         f. Place concrete or grout with no wrinkling of liner
            1) Vibrate to prevent voids

         g. After curing, remove internal forms or supports
         h. Finish seams following approved submittals

   c. Liner Attached to Wall Using Mastic.
      1) Apply mastic primer to manhole wall and cure following approved submittals
      2) Apply mastic to primed manhole wall

      3) Apply liner to mastic
         a) Embed anchoring extensions in mastic
         b) Wrinkling of liner not permitted

      4) Finish liner seams following approved submittals

4. Formed in Place Concrete Liner.
   a. Remove manhole steps
   b. Place pipe extensions in manhole at main line and pipes entering manhole

   c. Erect internal forms
      1) Place PVC or PE liner with forms when specified
      2) Seal forms at bench to prevent concrete leakage

   d. Place concrete to prevent segregation of aggregate and cement
   e. Consolidate concrete to fill pockets, seams and cracks in existing manhole wall
   f. Remove formwork when concrete is cured
   g. Finish liner seams following approved submittals
   h. Seal concrete liner at frame and at pipe penetrations following approved submittals.

3.4 RESET/REPLACE FRAME AND COVER

A. Follow Section 02530 and Standard Details.

3.5 REPLACE MANHOLE

A. Follow Section 02530 and Standard Details

3.6 FIELD TESTING

A. Visual inspection to determine integrity of rehabilitation materials and water-tightness.
   1. Provide flow-through plugs for duration of 6 hours
   2. No infiltration or inflow permitted
   3. Repair damage and leakage

B. Test manhole lining for continuity following ASTM D4787 and approved submittals.
   1. Repair holes and discontinuities following manufacturer’s recommendations.

C. Test grout and concrete for compressive strength following ASTM C109.

3.7 WARRANTY INSPECTIONS

A. Conduct visual inspection to determine integrity of rehabilitation materials and water-tightness within 3 months of expiration of guarantee period.
   1. Preferably conducted in spring season

B. Accompany Contract Manager on inspections.
C. Inspect 25 percent of manholes rehabilitated at locations selected by Contract Manager.
   1. No infiltration or inflow permitted
   2. If any manhole fails warranty inspection, inspect all manholes in contract with Contract Manager.

## PART 4 MEASUREMENT AND PAYMENT

4.1 REPLACE FRAME AND COVER

A. Measurement: By each manhole frame and cover replaced.
B. Payment: At unit price listed in Bid Schedule.
   1. Payment includes removal of existing frame and cover, replacing frame and cover, and disposal of old frame and cover following Section 02530 and Standard Details.

4.2 ADJUSTMENT MATERIALS

A. Measurement: By vertical linear foot of adjustment materials provided.
B. Payment: At price per linear foot listed in Bid Schedule.
   1. Payment includes providing adjustment materials following Standard Details, including at least one grade ring, from bottom of frame and cover to top of manhole cone following Section 02530.

**END OF SECTION**

# SECTION 02999
# MISCELLANEOUS WORK AND CLEANUP

## PART 1 GENERAL

### 1.1 SCOPE OF WORK

A. This Section includes operations which cannot be specified in detail as separate items but can be sufficiently described as to the kind and extent of work involved. Furnish all labor, materials, equipment and incidentals to complete the work under this Section.

B. The work of this Section includes, but is not limited to, the following:

1. Restoring of sidewalks, driveways, curbing and gutters.
2. Crossing utilities.
3. Relocation of existing water lines, low pressure, gas lines, telephone lines, electric lines, cable TV lines and storm drains as necessary, all as shown on the drawings.
4. Restoring easements and rights-of-ways.
5. Cleaning up.
6. Incidental work.

### 1.2 WORK SPECIFIED UNDER OTHER SECTIONS

A. All work shall be completed in a workmanlike manner by competent workmen in full compliance with all applicable sections of these Specifications.

## PART 2 PRODUCTS

### 2.1 MATERIALS

A. Materials required for this Section shall be of at least the same type and quality as materials that are to be restored. Where possible, reuse existing materials that are removed and then replaced, with the exception of paving.

## PART 3 EXECUTION

### 3.1 RESTORING OF CURBING, FENCES, AND GUARD RAILS

A. Existing curbing shall be protected. If necessary, curbing shall be removed from joint to joint and replaced after backfilling. Curbing which is damaged during construction shall be replaced with curing of equal quality and dimension.

### 3.2 CROSSING UTILITIES

A. This item shall include any extra work required in crossing culverts, water courses, drains, water mains, and other utilities, including all sheeting and bracing, extra excavation and backfill, or any other work required for the crossing, whether or not shown on the drawings.

3.3 RELOCATIONS OF EXISTING GAS LINES, TELEPHONE LINES, ELECTRIC LINES, AND CABLE TV LINES

A. Notify the proper authority of the utility involved when relocation of these lines is required. Coordinate all work by the utility so that the progress of construction will not be hampered.

3.4 PROTECTION AND RESTORATION OF PROPERTY

A. Protection and Restoration of Property: During the course of construction, take special care and provide adequate protection in order to minimize damage to vegetation, surfaced areas, and structures within the construction right-of-way, easement or site, and take full responsibility for the replacement or repair thereof. Immediately repair any damage to private property created by encroachment thereon. Should the removal or trimming of valuable trees, shrubs, or grass be required to facilitate the installation within the designated construction area, this work shall be done in cooperation with the County and/or local communities which the work takes place. Said valuable vegetation, removed or damaged, shall be replanted, if possible, or replaced by items of equal quality, and maintained until growth is re-established. Top soil damaged in the course of work shall be replaced in kind with suitable material, graded to match existing grade. Following construction completion, the work area along the route of the installation shall be finish grade to elevations compatible with the adjacent surface, with grassing or hand raking required within developed areas.

B. Existing lawn surfaces damaged by construction shall be re-graded and re-sodded. These areas shall be maintained until all work under this Contract has been completed and accepted.

3.5 CLEANING UP

A. Remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall render the site of the work in a neat and orderly condition.

B. Work site clean-up shall follow construction operations without delay.

3.6 INCIDENTAL WORK

A. Do all incidental work not otherwise specified, but obviously necessary for the proper completion of the Contract as specified and as shown on the drawings.

**END OF SECTION**

# SECTION 221313
# FACILITY SANITARY SEWERS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Non-pressure and pressure couplings.
3. Expansion joints and deflection fittings.
4. Backwater valves.
5. Cleanouts.
6. Encasement for piping.
7. Manholes.

### 1.3 DEFINITIONS

A. FRP: Fiberglass-reinforced plastic.

### 1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Expansion joints and deflection fittings.
2. Backwater valves.

B. Shop Drawings:
1. Pipes.
2. Manholes. Include plans, elevations, sections, details, and frames and covers.
3. Valves.
4. H-20 Rated Hatch including Frame and Cover.

### 1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from sewer system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles to horizontal scale of not less than 1 inch equals 50 feet (1:500) and to vertical scale of not less than 1 inch equals 5

feet (1:50). 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.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle manholes according to manufacturer's written rigging instructions.

## 1.7 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Sewerage Service: Do not interrupt service to facilities occupied by Owner 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**] 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**] [**Service and Extra-Heavy classes**] [**and**] [**Extra-Heavy 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. CISPI-Trademark, Shielded Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. ANACO-Husky.
b. Dallas Specialty & Mfg. Co.
c. Fernco Inc.
d. Mission Rubber Company; a division of MCP Industries, Inc.
e. Stant; a Tompkins company.
f. Tyler Pipe.

3. Description: ASTM C 1277 and CISPI 310, with stainless-steel corrugated shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

C. Heavy-Duty, Shielded Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. ANACO-Husky.
b. Clamp-All Corp.
c. Dallas Specialty & Mfg. Co.
d. Mission Rubber Company; a division of MCP Industries, Inc.
e. Stant; a Tompkins company.
f. Tyler Pipe.

3. 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.

D. Cast-Iron, Shielded Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. MG Piping Products Company.

3. Description: ASTM C 1277 with ASTM A 48/A 48M, two-piece, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.

E. Unshielded Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. ANACO-Husky.

3. Description: ASTM C 1277 and ASTM C 1461, rigid, sleeve-type, reducing- or transition-type mechanical coupling, with integral, center pipe stop, molded from ASTM C 1440, TPE material; with corrosion-resistant-metal tension band and tightening mechanism on each end.

## 2.3 DUCTILE-IRON, GRAVITY SEWER PIPE AND FITTINGS

A. Pipe: ASTM A 746, for push-on joints.

B. Standard Fittings: AWWA C110, ductile or gray iron, for push-on joints.

C. Compact Fittings: AWWA C153, ductile iron, for push-on joints.

D. Gaskets: AWWA C111, rubber.

## 2.4 DUCTILE-IRON, PRESSURE PIPE AND FITTINGS

A. Push-on-Joint Piping:

1. Pipe: AWWA C151.
2. Standard Fittings: AWWA C110, ductile or gray iron.
3. Compact Fittings: AWWA C153.
4. Gaskets: AWWA C111, rubber, of shape matching pipe and fittings.

B. Mechanical-Joint Piping:

1. Pipe: AWWA C151, with bolt holes in bell.
2. Standard Fittings: AWWA C110, ductile or gray iron, with bolt holes in bell.
3. Compact Fittings: AWWA C153, with bolt holes in bells.
4. Glands: Cast or ductile iron; with bolt holes and high-strength, cast-iron or high-strength, low-alloy steel bolts and nuts.
5. Gaskets: AWWA C111, rubber, of shape matching pipe, fittings, and glands.

## 2.5 ABS PIPE AND FITTINGS

A. ABS Sewer Pipe and Fittings: ASTM D 2751, with bell-and-spigot ends for gasketed joints.

1. NPS 3 to NPS 6 (DN 80 to DN 150): SDR 35.
2. NPS 8 to NPS 12 (DN 200 to DN 300): SDR 42.

B. Gaskets: ASTM F 477, elastomeric seals.

## 2.6 PVC PIPE AND FITTINGS

A. PVC Cellular-Core Sewer Piping:

1. Pipe: ASTM F 891, Sewer and Drain Series, PS 50 minimum stiffness, PVC cellular-core pipe with plain ends for solvent-cemented joints.
2. Fittings: ASTM D 3034, [**SDR 35**], PVC socket-type fittings.

B. 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.

C. PVC Profile Sewer Piping:

1. Pipe: ASTM F 794, PVC profile, gravity sewer pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

D. PVC Type PSM Sewer Piping:

1. Pipe: ASTM D 3034, [**SDR 35**], PVC Type PSM sewer pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

E. PVC Gravity Sewer Piping:

1. Pipe and Fittings: ASTM F 679, [**T-1**] [**T-2**] wall thickness, PVC gravity sewer pipe with bell-and-spigot ends and with integral ASTM F 477, elastomeric seals for gasketed joints.

F. PVC Pressure Piping:

1. Pipe: AWWA C900, [**Class 100**] [**Class 150**] [**and**] [**Class 200**] PVC pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: AWWA C900, [**Class 100**] [**Class 150**] [**and**] [**Class 200**] PVC pipe with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

G. PVC Water-Service Piping:

1. Pipe: ASTM D 1785, [**Schedule 40**] [**and**] [**Schedule 80**] PVC, with plain ends for solvent-cemented joints.
2. Fittings: [**ASTM D 2466, Schedule 40**] [**and**] [**ASTM D 2467, Schedule 80**] PVC, socket type.

## 2.7 FIBERGLASS PIPE AND FITTINGS

A. Fiberglass Sewer Pipe: ASTM D 3262, RTRP, for gasketed joints fabricated with [**Type 2, polyester**] [**Type 2, polyester or Type 4, epoxy**] [**Type 4, epoxy**] resin.

1. Liner: [**Reinforced thermoset**] [**Non-reinforced thermoset**] [**Thermoplastic**] [**No liner**].
2. Grade: [**Reinforced, surface layer matching pipe resin**] [**Non-reinforced, surface layer matching pipe resin**] [**No surface layer**].
3. Stiffness: [**9 psig (62 kPa)**] [**18 psig (124 kPa)**] [**36 psig (248 kPa)**] [**72 psig (496 kPa)**].

B. Fiberglass Non-pressure Fittings: ASTM D 3840, RTRF, for gasketed joints.

1. Laminating Resin: [**Type 1, polyester**] [**Type 1, polyester or Type 2, epoxy**] [**Type 2, epoxy**] resin.
2. Reinforcement: Grade with finish compatible with resin.

C. Gaskets: ASTM F 477, elastomeric seals.

## 2.8 CONCRETE PIPE AND FITTINGS

A. Non-reinforced-Concrete Sewer Pipe and Fittings: ASTM C 14 (ASTM C 14M), [**Class 1**] [**Class 2**] [**Class 3**], with [**bell-and-spigot**] [**or**] [**tongue-and-groove**] ends for gasketed joints with ASTM C 443 (ASTM C 443M), rubber gaskets.

B. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76 (ASTM C 76M).

1. [**Bell-and-spigot**] [**or**] [**tongue-and-groove**] ends for gasketed joints, with ASTM C 443 (ASTM C 443M), rubber gaskets.
2. Class II, [**Wall A**] [**Wall B**] [**Wall C**].
3. Class III, [**Wall A**] [**Wall B**] [**Wall C**].
4. Class IV, [**Wall A**] [**Wall B**] [**Wall C**].
5. Class V, [**Wall A**] [**Wall B**].

## 2.9 NONPRESSURE-TYPE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground non-pressure 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 Cast-Iron Soil Pipes: ASTM C 564, rubber.
2. For Concrete Pipes: ASTM C 443 (ASTM C 443M), rubber.
3. For Fiberglass Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
4. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
5. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

    a. Dallas Specialty & Mfg. Co.
    b. Fernco Inc.
    c. Logan Clay Pipe.
    d. Mission Rubber Company; a division of MCP Industries, Inc.
    e. NDS.
    f. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

3. 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. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

    a. Cascade Waterworks Mfg.
    b. Dallas Specialty & Mfg. Co.
    c. Mission Rubber Company; a division of MCP Industries, Inc.

3. 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. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

    a. Fernco Inc.
    b. Logan Clay Pipe.
    c. Mission Rubber Company; a division of MCP Industries, Inc.

3. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

F. Non-pressure-Type, Rigid Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. ANACO-Husky.

3. Description: ASTM C 1461, sleeve-type, reducing- or transition-type mechanical coupling, molded from ASTM C 1440, TPE material; with corrosion-resistant-metal tension band and tightening mechanism on each end.

## 2.10 PRESSURE-TYPE PIPE COUPLINGS

A. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

B. Basis-of-Design Product: Subject to compliance with requirements, provide [**product indicated on Drawings**] or comparable product by one of the following:

1. Cascade Waterworks Mfg.
2. Dresser, Inc.
3. Ford Meter Box Company, Inc. (The); Pipe Products Div.
4. JCM Industries, Inc.
5. Romac Industries, Inc.
6. Smith-Blair, Inc.; a Sensus company.
7. Victaulic Depend-O-Lok, Inc.
8. Viking Johnson.
9. <**Insert manufacturer's name**>.

C. Tubular-Sleeve Couplings: AWWA C219, with center sleeve, gaskets, end rings, and bolt fasteners.

D. Metal, bolted, sleeve-type, reducing or transition coupling, for joining underground pressure piping. Include [**150-psig (1035-kPa)**] [**200-psig (1380-kPa)**] minimum pressure rating and ends of same sizes as piping to be joined.

E. Center-Sleeve Material: [**Manufacturer's standard**] [**Carbon steel**] [**Stainless steel**] [**Ductile iron**] [**Malleable iron**].

F. Gasket Material: Natural or synthetic rubber.

G. Metal Component Finish: Corrosion-resistant coating or material.

## 2.11 EXPANSION JOINTS AND DEFLECTION FITTINGS

A. Ductile-Iron, Flexible Expansion Joints:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. EBAA Iron, Inc.

b. Romac Industries, Inc.
c. Star Pipe Products.

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 (1725-kPa) minimum working pressure and for offset and expansion indicated.

B. Ductile-Iron Expansion Joints:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. Dresser, Inc.
b. EBAA Iron, Inc.
c. JCM Industries, Inc.
d. Smith-Blair, Inc.; a Sensus company.

3. Description: Three-piece assembly of telescoping sleeve with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Include rating for 250-psig (1725-kPa) minimum working pressure and for expansion indicated.

C. Ductile-Iron Deflection Fittings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. EBAA Iron, Inc.

3. Description: Compound coupling fitting with ball joint, flexing section, gaskets, and restrained-joint ends complying with AWWA C110 or AWWA C153. Include rating for 250-psig (1725-kPa) minimum working pressure and for up to 15 degrees of deflection.

## 2.12 BACKWATER VALVES

A. Cast-Iron Backwater Valves:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. Josam Company.

b. Smith, Jay R. Mfg. Co.
c. Tyler Pipe.
d. Watts Water Technologies, Inc.
e. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

3. Description: ASME A112.14.1, gray-iron body and bolted cover, with bronze seat.
4. Horizontal type; with swing check valve and hub-and-spigot ends.
5. Combination horizontal and manual gate-valve type; with swing check valve, integral gate valve, and hub-and-spigot ends.
6. Terminal type; with bronze seat, swing check valve, and hub inlet.

B. PVC Backwater Valves:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. Canplas LLC.
b. IPS Corporation.
c. NDS.
d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
e. Sioux Chief Manufacturing Company, Inc.
f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.
g. <**Insert manufacturer's name**>.

3. Description: Horizontal type; with PVC body, PVC removable cover, and PVC swing check valve.

## 2.13 CLEANOUTS

A. Cast-Iron Cleanouts:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. Josam Company.
b. MIFAB, Inc.
c. Smith, Jay R. Mfg. Co.
d. Tyler Pipe.
e. Watts Water Technologies, Inc.
f. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

3. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.

4. Top-Loading Classification(s): [**Light Duty**] [**Medium Duty**] [**Heavy Duty**] [**and**] [**Extra-Heavy Duty**].
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

B. PVC Cleanouts:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

   a. Canplas LLC.
   b. IPS Corporation.
   c. NDS.
   d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
   e. Sioux Chief Manufacturing Company, Inc.
   f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.

3. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

## 2.14 ENCASEMENT FOR PIPING

A. Standard: ASTM A 674 or AWWA C105.

B. Material: [**Linear low-density polyethylene film of 0.008-inch (0.20-mm)**] [**or**] [**high-density, cross-laminated polyethylene film of 0.004-inch (0.10-mm)**] minimum thickness.

C. Form: [**Sheet**] [**or**] [**tube**].

D. Color: [**Black**] [**or**] [**natural**]

## 2.15 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C 478 (ASTM C 478M), precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches (1200 mm) 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 (150-mm) minimum thickness for floor slab and 4-inch (100-mm) minimum thickness for walls and base riser section; with separate base slab or base section with integral floor.
5. Riser Sections: 4-inch (100-mm) minimum thickness, of length to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated; with top of cone of size that matches grade rings.

7. Joint Sealant: ASTM C 990 (ASTM C 990M), bitumen or butyl rubber.
8. Resilient Pipe Connectors: ASTM C 923 (ASTM C 923M), cast or fitted into manhole walls, for each pipe connection.
9. Steps: [**Individual FRP steps or FRP ladder**] [**Individual FRP steps, FRP ladder, or ASTM A 615/A 615M, deformed, 1/2-inch (13-mm) steel reinforcing rods encased in ASTM D 4101, PP**] [**ASTM A 615/A 615M, deformed, 1/2-inch (13-mm) steel reinforcing rods encased in ASTM D 4101, PP**]; 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 (300- to 400-mm) intervals. Omit steps if total depth from floor of manhole to finished grade is less than [**60 inches (1500 mm)**]
10. Adjusting Rings: Interlocking HDPE rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as 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 (150- to 225-mm) total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Designed Precast Concrete Manholes:

1. Description: ASTM C 913; designed according to ASTM C 890 for A-16 (ASSHTO HS20-44), heavy-traffic, structural loading; of depth, shape, and dimensions indicated, with provision for sealant joints.
2. Ballast: Increase thickness of one or more precast concrete sections or add concrete to manhole as required to prevent flotation.
3. Joint Sealant: ASTM C 990 (ASTM 990M), bitumen or butyl rubber.
4. Resilient Pipe Connectors: ASTM C 923 (ASTM C 923M), cast or fitted into manhole walls, for each pipe connection.
5. Steps: [**Individual FRP steps or FRP ladder**] [**Individual FRP steps, FRP ladder, or ASTM A 615/A 615M, deformed, 1/2-inch (13-mm) steel reinforcing rods encased in ASTM D 4101, PP**] [**ASTM A 615/A 615M, deformed, 1/2-inch (13-mm) steel reinforcing rods encased in ASTM D 4101, PP**]; 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 (300- to 400-mm) intervals. Omit steps if total depth from floor of manhole to finished grade is less than [**60 inches (1500 mm)**]
6. Adjusting Rings: Interlocking HDPE rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as required adjusting manhole frame and covering to indicated elevation and slope. Include sealant recommended by ring manufacturer.
7. Grade Rings: Reinforced-concrete rings, 6- to 9-inch (150- to 225-mm) total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

C. Fiberglass Manholes:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

   a. Associated Fiberglass Enterprises.

b. Containment Solutions, Inc.
c. L. F. Manufacturing, Inc.

3. Description: ASTM D 3753.
4. Diameter: 48 inches (1200 mm) minimum unless otherwise indicated.
5. Ballast: Increase thickness of concrete base as required to prevent flotation.
6. Base Section: Concrete, 6-inch (150-mm) minimum thickness.
7. Resilient Pipe Connectors: ASTM C 923 (ASTM C 923M), cast or fitted into manhole walls, for each pipe connection.
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 (300- to 400-mm) intervals. Omit steps if total depth from floor of manhole to finished grade is less than [**60 inches (1500 mm)**].
9. Adjusting Rings: Interlocking HDPE rings, with level or sloped edge in thickness and diameter matching manhole frame and cover, and with height as required adjusting manhole frame and covering to indicated elevation and slope. Include sealant recommended by ring manufacturer.
10. Grade Rings: Reinforced-concrete rings, 6- to 9-inch (150- to 225-mm) total thickness, with diameter matching manhole frame and cover, and with height as required to adjust manhole frame and cover to indicated elevation and slope.

D. Manhole Frames and Covers:

1. Description: Ferrous; 24-inch (610-mm) ID by 7- to 9-inch (175- to 225-mm) riser, with 4-inch- (100-mm-) minimum-width flange and 26-inch- (660-mm-) diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "SANITARY SEWER."
2. Material: [**ASTM A 536, Grade 60-40-18 ductile**] [**ASTM A 48/A 48M, Class 35 gray**] iron unless otherwise indicated.

E. Manhole-Cover Inserts:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**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 [**product indicated on Drawings**] or comparable product by one of the following:

a. FRW Industries; a Syneco Systems, Inc. company.
b. Knutson Enterprises.
c. L. F. Manufacturing, Inc.
d. Parson Environmental Products, Inc.

3. Description; Manufactured, plastic form, of size to fit between manhole frame and cover and designed to prevent stormwater inflow. Include handle for removal and gasket for gastight sealing.
4. Type: [**Solid**] [**Drainage with vent holes**] [**Valve**].

## 2.16 CONCRETE

A. General: Cast-in-place concrete complying with ACI 318, ACI 350/350R (ACI 350M/350RM), 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 (27.6 MPa) 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 (27.6 MPa) 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: [**1**] [**2**] percent through manhole.

2. Benches: Concrete, sloped to drain into channel.

   a. Slope: [**4**] [**8**] percent.

D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi (20.7 MPa) 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.

# PART 3 - EXECUTION

## 3.1 EARTHWORK

A. Excavating, 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 sanitary sewer 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 using 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 micro-tunneling.

F. Install gravity-flow, non-pressure, drainage piping according to the following:

1. Install piping pitched down in direction of flow, at minimum slope of [**1**] [**2**] percent unless otherwise indicated.
2. Install piping [**NPS 6 (DN 150)**] 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 (915-mm)**] [**48-inch (1220-mm)**] [**60-inch (1520-mm)**] [**72-inch (1830-mm)**] 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, gravity sewer piping according to ASTM A 746.
7. Install ABS sewer piping according to ASTM D 2321 and ASTM F 1668.
8. Install PVC cellular-core sewer piping according to ASTM D 2321 and ASTM F 1668.
9. Install PVC corrugated sewer piping according to ASTM D 2321 and ASTM F 1668.
10. Install PVC profile sewer piping according to ASTM D 2321 and ASTM F 1668.
11. Install PVC Type PSM sewer piping according to ASTM D 2321 and ASTM F 1668.
12. Install PVC gravity sewer piping according to ASTM D 2321 and ASTM F 1668.
13. Install fiberglass sewer piping according to ASTM D 3839 and ASTM F 1668.
14. Install nonreinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."
15. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

G. Install force-main, pressure piping according to the following:

1. Install piping with restrained joints at tee fittings and at horizontal and vertical changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place-concrete supports or anchors.
2. Install piping with [**36-inch (915-mm)**] [**48-inch (1220-mm)**] [**60-inch (1520-mm)**] [**72-inch (1830-mm)**] minimum cover.
3. Install ductile-iron pressure piping according to AWWA C600 or AWWA M41.
4. Install ductile-iron special fittings according to AWWA C600.
5. Install PVC pressure piping according to AWWA M23 or to ASTM D 2774 and ASTM F 1668.
6. Install PVC water-service piping according to ASTM D 2774 and ASTM F 1668.

H. 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.
2. Hubless cast-iron soil pipe and fittings.
3. Ductile-iron pipe and fittings.
4. Expansion joints and deflection fittings.

I. Clear interior of piping and manholes of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

## 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 gasket 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, gravity sewer piping according to AWWA C600 for push-on joints.
5. Join ABS sewer piping according to ASTM D 2321 and ASTM D 2751 for elastomeric-seal joints.
6. Join PVC cellular-core sewer piping according to ASTM D 2321 and ASTM F 891 for solvent-cemented joints.
7. Join PVC corrugated sewer piping according to ASTM D 2321.
8. Join PVC profile sewer piping according to ASTM D 2321 for elastomeric-seal joints or ASTM F 794 for gasketed joints.
9. Join PVC Type PSM sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.
10. Join PVC gravity sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.
11. Join fiberglass sewer piping according to ASTM D 4161 for elastomeric-seal joints.
12. Join nonreinforced-concrete sewer piping according to ASTM C 14 (ASTM C 14M) and ACPA's "Concrete Pipe Installation Manual" for rubber-gasket joints.
13. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasket joints.
14. Join dissimilar pipe materials with nonpressure-type, flexible[ **or rigid**] couplings.

B. Join force-main, pressure piping according to the following:

1. Join ductile-iron pressure piping according to AWWA C600 or AWWA M41 for push-on joints.
2. Join ductile-iron special fittings according to AWWA C600 or AWWA M41 for push-on joints.
3. Join PVC pressure piping according to AWWA M23 for gasketed joints.
4. Join PVC water-service piping according to ASTM D 2855.
5. Join dissimilar pipe materials with pressure-type couplings.

C. Pipe couplings, expansion joints, and deflection fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

1. Use nonpressure flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.

a. [**Unshielded**] [**Shielded**] flexible[ **or rigid**]couplings for pipes of same or slightly different OD.
b. Unshielded, increaser/reducer-pattern, flexible[ **or rigid**]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.

2. Use pressure pipe couplings for force-main joints.

## 3.4 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. Install FRP manholes according to manufacturer's written instructions.

D. Form continuous concrete channels and benches between inlets and outlet.

E. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops [**3 inches (76 mm)**] above finished surface elsewhere unless otherwise indicated.

F. Install manhole-cover inserts in frame and immediately below cover.

## 3.5 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

## 3.6 BACKWATER VALVE INSTALLATION

A. Install horizontal-type backwater valves in piping manholes or pits.

B. Install combination horizontal and manual gate valves in piping and in manholes.

C. Install terminal-type backwater valves on end of piping and in manholes. Secure units to sidewalls.

## 3.7 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts, and use cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in [**earth or unpaved foot-traffic**] areas.
2. Use Medium-Duty, top-loading classification cleanouts in [**paved foot-traffic**] areas.
3. Use Heavy-Duty, top-loading classification cleanouts in [**vehicle-traffic service**] areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in [**roads**].

B. Set cleanout frames and covers in earth in cast-in-place-concrete block, [**18 by 18 by 12 inches (450 by 450 by 300 mm)**] deep. Set with tops [**1 inch (25 mm)**] above surrounding grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

## 3.8 CONNECTIONS

A. Connect non-pressure, gravity-flow drainage piping to building's sanitary building drains specified in Division 22 Section "Sanitary Waste and Vent Piping."

B. Connect force-main piping to building's sanitary force mains specified in Division 22 Section "Sanitary Waste and Vent Piping." Terminate piping where indicated.

C. 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 (150-mm) overlap with not less than 6 inches (150 mm) of concrete with 28-day compressive strength of 3000 psi (20.7 MPa).
2. Make branch connections from side into existing piping, NPS 4 to NPS 20 (DN 100 to DN 500). Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches (150 mm) of concrete with 28-day compressive strength of 3000 psi (20.7 MPa).
3. Make branch connections from side into existing piping, NPS 21 (DN 525) or larger, or to underground manholes by cutting opening into existing unit large enough to allow 3 inches (76 mm) 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 or manhole wall, encase entering connection in 6 inches (150 mm) of concrete for minimum length of 12 inches (300 mm) 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 (20.7 MPa) unless otherwise indicated.
    b. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.

4. Protect existing piping and manholes to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

D. Connect to [**grease**] [**oil**] [**and**] [**sand**] interceptors specified in Division 22 Section "Sanitary Waste Interceptors."

## 3.9 CLOSING ABANDONED SANITARY SEWER SYSTEMS

A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:

1. Close open ends of piping with at least [**8-inch- (203-mm-)**] thick, brick masonry bulkheads.
2. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.

B. Abandoned Manholes: Excavate around manhole as required and use either procedure below:

1. Remove manhole and close open ends of remaining piping.
2. Remove top of manhole down to at least [**36 inches (915 mm)**] <**Insert dimension**> below final grade. Fill to within [**12 inches (300 mm)**] <**Insert dimension**> of top with stone, rubble, gravel, or compacted dirt. Fill to top with concrete.

C. Backfill to grade according to Division 31 Section "Earth Moving."

## 3.10 IDENTIFICATION

A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tapes directly over piping and at outside edges of underground manholes.

1. Use[ **warning tape or**] detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground manholes.

## 3.11 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches (600 mm) of backfill is in place, and again at completion of Project.

1. Submit separate report 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. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:

    a. Fill sewer piping with water. Test with pressure of at least 10-foot (3-m) head of water, and maintain such pressure without leakage for at least 15 minutes.
    b. Close openings in system and fill with water.
    c. Purge air and refill with water.
    d. Disconnect water supply.
    e. Test and inspect joints for leaks.

6. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

    a. Option: Test plastic gravity sewer piping according to ASTM F 1417.
    b. Option: Test concrete gravity sewer piping according to ASTM C 924 (ASTM C 924M).

7. Force Main: Perform hydrostatic test after thrust blocks, supports, and anchors have hardened. Test at pressure not less than 1-1/2 times the maximum system operating pressure, but not less than [**150 psig (1035 kPa)**].

    a. Ductile-Iron Piping: Test according to AWWA C600, "Hydraulic Testing" Section.
    b. PVC Piping: Test according to AWWA M23, "Testing and Maintenance" Chapter.

8. Manholes: Perform hydraulic test according to ASTM C 969 (ASTM C 969M).

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.

## 3.12 CLEANING

A. Clean dirt and superfluous material from interior of piping.[ **Flush with potable water.**]

**END OF SECTION 221313**

# SECTION 221316
# SANITARY WASTE AND VENT PIPING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

B. Related Sections:

1. Division 22 Section "Facility Sanitary Sewers" for sanitary sewerage piping and structures outside the building.
2. Division 22 Section "Sanitary Sewerage Pumps" for effluent and sewage pumps.
3. Division 22 Section "Chemical-Waste Systems for Laboratory and Healthcare Facilities" for chemical-waste and vent piping systems.

### 1.3 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: [**10-foot head of water (30 kPa)**].
2. Waste, Force-Main Piping: [**50 psig (345 kPa)**] [**100 psig (690 kPa)**] [**150 psig (1035 kPa)**].

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to [**ASCE/SEI 7**].

### 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For solvent cements and adhesive primers, documentation including printed statement of VOC content.

2. Laboratory Test Reports for Credit IEQ 4: For solvent cements and adhesive primers, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: For solvent drainage system. Include plans, elevations, sections, and details.

## 1.5 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control reports.

## 1.6 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-DWV" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

## 1.7 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner 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**] days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without [**Project Manager's**] written permission.

# PART 2 - PRODUCTS

## 2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

## 2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 74, [**Service**] [**and**] [**Extra Heavy**] class(es).

B. Gaskets: ASTM C 564, rubber.

C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

## 2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.

C. CISPI, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

    a. ANACO-Husky.
    b. Dallas Specialty & Mfg. Co.
    c. Fernco Inc.
    d. Matco-Norca, Inc.
    e. MIFAB, Inc.
    f. Mission Rubber Company; a division of MCP Industries, Inc.
    g. Stant.
    h. Tyler Pipe.

2. Standards: ASTM C 1277 and CISPI 310.
3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Heavy-Duty, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

    a. ANACO-Husky.
    b. Clamp-All Corp.
    c. Dallas Specialty & Mfg. Co.
    d. MIFAB, Inc.
    e. Mission Rubber Company; a division of MCP Industries, Inc.
    f. Stant.
    g. Tyler Pipe.

2. Standards: ASTM C 1277 and ASTM C 1540.
3. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

E. Cast-Iron, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

   a. MG Piping Products Company.

2. Standard: ASTM C 1277.
3. Description: Two-piece ASTM A 48/A 48M, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.

## 2.4 GALVANIZED-STEEL PIPE AND FITTINGS

A. Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Standard Weight class. Include square-cut-grooved or threaded ends matching joining method.

B. [**Galvanized-**]Cast-Iron Drainage Fittings: ASME B16.12, threaded.

C. Steel Pipe Pressure Fittings:

1. [**Galvanized-**]Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Schedule 40, seamless steel pipe. Include ends matching joining method.
2. Malleable-Iron Unions: ASME B16.39; Class 150; hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface; and female threaded ends.
3. [**Galvanized-**]Gray-Iron, Threaded Fittings: ASME B16.4, Class 125, standard pattern.

D. Cast-Iron Flanges: ASME B16.1, Class 125.

1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

E. Grooved-Joint, Galvanized-Steel-Pipe Appurtenances:

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

   a. Anvil International; a subsidiary of Mueller Water Products, Inc.
   b. Grinnell Mechanical Products.
   c. Shurjoint Piping Products.
   d. Victaulic Company.

2. Galvanized, Grooved-End Fittings for Galvanized-Steel Piping: ASTM A 536 ductile-iron castings, ASTM A 47/A 47M malleable-iron castings, ASTM A 234/A 234M forged steel fittings, or ASTM A 106/A 106M steel pipes with dimensions matching ASTM A 53/A 53M steel pipe, and complying with AWWA C606 for grooved ends.

3. Grooved Mechanical Couplings for Galvanized-Steel Piping: ASTM F 1476, Type I. Include ferrous housing sections with continuous curved keys; EPDM-rubber gasket suitable for hot and cold water; and bolts and nuts.

## 2.5 STAINLESS-STEEL PIPE AND FITTINGS

A. Pipe and Fittings: ASME A112.3.1, drainage pattern with socket and spigot ends.

B. Internal Sealing Rings: Elastomeric gaskets shaped to fit socket groove.

## 2.6 DUCTILE-IRON PIPE AND FITTINGS

A. Ductile-Iron, Mechanical-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Ductile-Iron Fittings: AWWA C110/A21.10, mechanical-joint, ductile- or gray-iron standard pattern or AWWA C153/A21.53, ductile-iron compact pattern.
3. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

B. Ductile-Iron, Push-on-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Ductile-Iron Fittings: AWWA C110/A21.10, push-on-joint ductile- or gray-iron standard pattern or AWWA C153/A21.53, ductile-iron compact pattern.
3. Gaskets: AWWA C111/A21.11, rubber.

C. Ductile-Iron, Grooved-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51 with round-cut-grooved ends according to AWWA C606.
2. Ductile-Iron-Pipe Appurtenances:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Anvil International.
2) Shurjoint Piping Products.
3) Star Pipe Products.
4) Victaulic Company.

b. Grooved-End, Ductile-Iron Fittings: ASTM A 536 ductile-iron castings with dimensions matching AWWA C110/A 21.10 ductile-iron pipe or AWWA C153/A 21.53 ductile-iron fittings and complying with AWWA C606 for grooved ends.

c. Grooved Mechanical Couplings for Ductile-Iron Pipe: ASTM F 1476, Type I. Include ferrous housing sections with continuous curved keys; EPDM-rubber center-leg gasket suitable for hot and cold water; and bolts and nuts.

## 2.7 COPPER TUBE AND FITTINGS

A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Hard Copper Tube: ASTM B 88, Type L and Type M (ASTM B 88M, Type B and Type C), water tube, drawn temper.

D. Soft Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B), water tube, annealed temper.

E. Copper Pressure Fittings:

1. Copper Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Copper Unions: MSS SP-123, copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

F. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.

1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

G. Solder: ASTM B 32, lead free with ASTM B 813, water-flushable flux.

## 2.8 ABS PIPE AND FITTINGS

A. Solid-Wall ABS Pipe: ASTM D 2661, Schedule 40.

B. Cellular-Core ABS Pipe: ASTM F 628, Schedule 40.

C. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.

D. Solvent Cement: ASTM D 2235.

1. ABS solvent cement shall have a VOC content of 325 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Solvent cement shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## 2.9 PVC PIPE AND FITTINGS

A. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.

B. Cellular-Core PVC Pipe: ASTM F 891, Schedule 40.

C. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

D. Adhesive Primer: ASTM F 656.

1. Adhesive primer shall have a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesive primer shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Solvent Cement: ASTM D 2564.

1. PVC solvent cement shall have a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Solvent cement shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## 2.10 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
3. Unshielded, Nonpressure Transition Couplings:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Dallas Specialty & Mfg. Co.
2) Fernco Inc.
3) Mission Rubber Company; a division of MCP Industries, Inc.
4) Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

b. Standard: ASTM C 1173.
c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
d. Sleeve Materials:

1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

4. Shielded, Non-pressure Transition Couplings:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Cascade Waterworks Mfg. Co.
2) Mission Rubber Company; a division of MCP Industries, Inc.

b. Standard: ASTM C 1460.
c. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

5. Pressure Transition Couplings:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Cascade Waterworks Mfg. Co.
2) Dresser, Inc.
3) EBAA Iron, Inc.
4) JCM Industries, Inc.
5) Romac Industries, Inc.
6) Smith-Blair, Inc.; a Sensus company.
7) The Ford Meter Box Company, Inc.
8) Viking Johnson.

b. Standard: AWWA C219.
c. Description: Metal, sleeve-type same size as, with pressure rating at least equal to, and ends compatible with, pipes to be joined.
d. Center-Sleeve Material: [**Manufacturer's standard**] [**Carbon steel**] [**Stainless steel**] [**Ductile iron**] [**Malleable iron**].
e. Gasket Material: Natural or synthetic rubber.
f. Metal Component Finish: Corrosion-resistant coating or material.

B. Dielectric Fittings:

1. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
2. Dielectric Unions:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Capitol Manufacturing Company.
2) Central Plastics Company.
3) Hart Industries International, Inc.
4) Jomar International Ltd.
5) Matco-Norca, Inc.
6) McDonald, A. Y. Mfg. Co.
7) Watts Regulator Co.; a division of Watts Water Technologies, Inc.
8) Wilkins; a Zurn company.

b. Description:

1) Standard: ASSE 1079.
2) Pressure Rating: [**125 psig (860 kPa) minimum at 180 deg F (82 deg C)**] [**150 psig (1035 kPa)**] [**250 psig (1725 kPa)**].
3) End Connections: Solder-joint copper alloy and threaded ferrous.

3. Dielectric Flanges:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Capitol Manufacturing Company.
2) Central Plastics Company.
3) Matco-Norca, Inc.
4) Watts Regulator Co.; a division of Watts Water Technologies, Inc.
5) Wilkins; a Zurn company.

b. Description:

1) Standard: ASSE 1079.
2) Factory-fabricated, bolted, companion-flange assembly.
3) Pressure Rating: [**125 psig (860 kPa) minimum at 180 deg F (82 deg C)**] [**150 psig (1035 kPa)**] [**175 psig (1200 kPa)**] [**300 psig (2070 kPa)**].
4) End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

4. Dielectric-Flange Insulating Kits:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Advance Products & Systems, Inc.
2) Calpico, Inc.
3) Central Plastics Company.
4) Pipeline Seal and Insulator, Inc.

b. Description:

1) Nonconducting materials for field assembly of companion flanges.
2) Pressure Rating: [**150 psig (1035 kPa)**] <**Insert pressure**>.

3) Gasket: Neoprene or phenolic.
4) Bolt Sleeves: Phenolic or polyethylene.
5) Washers: Phenolic with steel backing washers.

5. Dielectric Nipples:

a. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

1) Elster Perfection.
2) Grinnell Mechanical Products.
3) Matco-Norca, Inc.
4) Precision Plumbing Products, Inc.
5) Victaulic Company.

b. Description:

1) Standard: IAPMO PS 66
2) Electroplated steel nipple.
3) Pressure Rating: [**300 psig (2070 kPa) at 225 deg F (107 deg C)**] <**Insert pressure and temperature**>.
4) End Connections: Male threaded or grooved.
5) Lining: Inert and noncorrosive, propylene.

## 2.11 ENCASEMENT FOR UNDERGROUND METAL PIPING

A. Standard: ASTM A 674 or AWWA C105/A 21.5.

B. Material: [**Linear low-density polyethylene film of 0.008-inch (0.20-mm)**] [**or**] [**high-density, cross-laminated polyethylene film of 0.004-inch (0.10-mm)**] minimum thickness.

C. Form: [**Sheet**] [**or**] [**tube**].

D. Color: [**Black**] [**or**] [**natural**]

# PART 3 - EXECUTION

## 3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Division 31 Section "Earth Moving."

## 3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate

friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."

K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 (DN 80) and smaller; [**1 percent**] [**2 percent**] downward in direction of flow for piping NPS 4 (DN 100) and larger.
2. Horizontal Sanitary Drainage Piping: [**2 percent**] downward in direction of flow.
3. Vent Piping: [**1 percent**] down toward vertical fixture vent or toward vent stack.

N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

O. Install steel piping according to applicable plumbing code.

P. Install stainless-steel piping according to ASME A112.3.1 and applicable plumbing code.

Q. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

R. Install aboveground ABS piping according to ASTM D 2661.

S. Install aboveground PVC piping according to ASTM D 2665.

T. Install underground [**ABS**] [**and**] [**PVC**] piping according to ASTM D 2321.

U. Install engineered soil and waste drainage and vent piping systems as follows:

1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
2. Sovent Drainage System: Comply with ASSE 1043 and sovent fitting manufacturer's written installation instructions.
3. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.

V. Install underground, ductile-iron, force-main piping according to AWWA C600. Install buried piping inside building between wall and floor penetrations and connection to sanitary sewer piping outside building with restrained joints. Anchor pipe to wall or floor. Install thrust-block supports at vertical and horizontal offsets.

1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.

W. Install underground, copper, force-main tubing according to CDA's "Copper Tube Handbook."

1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.

X. Install force mains at elevations indicated.

Y. Plumbing Specialties:

1. Install backwater valves in sanitary waster gravity-flow piping. Comply with requirements for backwater valves specified in Division 22 Section "Sanitary Waste Piping Specialties."
2. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Division 22 Section "Sanitary Waste Piping Specialties."
3. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Division 22 Section "Sanitary Waste Piping Specialties."

Z. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

AA. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

BB. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

CC. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 22 Section "Escutcheons for Plumbing Piping."

## 3.3 JOINT CONSTRUCTION

A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

B. 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.

C. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

E. Join stainless-steel pipe and fittings with gaskets according to ASME A112.3.1.

F. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.

G. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.

H. Flanged Joints: Align bolt holes. Select appropriate gasket material, size, type, and thickness. Install gasket concentrically positioned. Use suitable lubricants on bolt threads. Torque bolts in cross pattern.

I. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.

3. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 Appendixes.

## 3.4 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in OD's.
2. In Drainage Piping: [**Unshielded**] [**Shielded**], non-pressure transition couplings.
3. In Aboveground Force Main Piping: Fitting-type transition couplings.
4. In Underground Force Main Piping:

   a. NPS 1-1/2 (DN 40) and Smaller: Fitting-type transition couplings.
   b. NPS 2 (DN 50) and Larger: Pressure transition couplings.

B. Dielectric Fittings:

1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
2. Dielectric Fittings for [**NPS 2 (DN 50)**] and Smaller: Use dielectric [**nipples**] [**unions**].
3. Dielectric Fittings for [**NPS 2-1/2 to NPS 4 (DN 65 to DN 100)**]: Use dielectric [**flanges**] [**flange kits**] [**nipples**].
4. Dielectric Fittings for [**NPS 5 (DN 125)**] and Larger: Use dielectric flange kits.

## 3.5 VALVE INSTALLATION

A. General valve installation requirements are specified in Division 22 Section "General-Duty Valves for Plumbing Piping."

B. Shutoff Valves:

1. Install shutoff valve on each sewage pump discharge.
2. Install gate or full-port ball valve for piping NPS 2 (DN 50) and smaller.
3. Install gate valve for piping NPS 2-1/2 (DN 65) and larger.

C. Check Valves: Install swing check valve, between pump and shutoff valve, on each sewage pump discharge.

D. Backwater Valves: Install backwater valves in piping subject to backflow.

1. Horizontal Piping: Horizontal backwater valves. [**Use normally closed type unless otherwise indicated.**]
2. Floor Drains: Drain outlet backwater valves unless drain has integral backwater valve.
3. Install backwater valves in accessible locations.
4. Comply with requirements for backwater valve specified in Division 22 Section "Sanitary Waste Piping Specialties."

## 3.6 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

1. Install [**carbon-steel**] pipe hangers for horizontal piping in noncorrosive environments.
2. Install [**stainless-steel**] [**fiberglass**] pipe hangers for horizontal piping in corrosive environments.
3. Install [**carbon-steel**] pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42 clamps.
6. Install individual, straight, horizontal piping runs:

    a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
    b. Longer than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
    c. Longer than 100 Feet (30 m) if Indicated: MSS Type 49, spring cushion rolls.

7. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
8. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches (300 mm) of each fitting [**valve**] and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
2. NPS 3 (DN 80): 60 inches (1500 mm) with 1/2-inch (13-mm) rod.
3. NPS 4 and NPS 5 (DN 100 and DN 125): 60 inches (1500 mm) with 5/8-inch (16-mm) rod.
4. NPS 6 and NPS 8 (DN 150 and DN 200): 60 inches (1500 mm) with 3/4-inch (19-mm) rod.
5. NPS 10 and NPS 12 (DN 250 and DN 300): 60 inches (1500 mm) with 7/8-inch (22-mm) rod.
6. Spacing for 10-foot (3-m) lengths may be increased to 10 feet (3 m). Spacing for fittings is limited to 60 inches (1500 mm).

G. Install supports for vertical cast-iron soil piping every 15 feet (4.5 m).

H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4 (DN 32): 84 inches (2100 mm) with 3/8-inch (10-mm) rod.
2. NPS 1-1/2 (DN 40): 108 inches (2700 mm) with 3/8-inch (10-mm) rod.
3. NPS 2 (DN 50): 10 feet (3 m) with 3/8-inch (10-mm) rod.
4. NPS 2-1/2 (DN 65): 11 feet (3.4 m) with 1/2-inch (13-mm) rod.

5. NPS 3 (DN 80): 12 feet (3.7 m) with 1/2-inch (13-mm) rod.
6. NPS 4 and NPS 5 (DN 100 and DN 125): 12 feet (3.7 m) with 5/8-inch (16-mm) rod.
7. NPS 6 and NPS 8 (DN 150 and DN 200): 12 feet (3.7 m) with 3/4-inch (19-mm) rod.
8. NPS 10 and NPS 12 (DN 250 and DN 300): 12 feet (3.7 m) with 7/8-inch (22-mm) rod.

I. Install supports for vertical steel piping every 15 feet (4.5 m).

J. Install hangers for stainless-steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 2 (DN 50): 84 inches (2100 mm) with 3/8-inch (10-mm) rod.
2. NPS 3 (DN 80): 96 inches (2400 mm) with 1/2-inch (13-mm) rod.
3. NPS 4 (DN 100): 108 inches (2700 mm) with 1/2-inch (13-mm) rod.
4. NPS 6 (DN 150): 10 feet (3 m) with 5/8-inch (16-mm) rod.

K. Install supports for vertical stainless-steel piping every 10 feet (3 m).

L. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4 (DN 32): 72 inches (1800 mm) with 3/8-inch (10-mm) rod.
2. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 96 inches (2400 mm) with 3/8-inch (10-mm) rod.
3. NPS 2-1/2 (DN 65): 108 inches (2700 mm) with 1/2-inch (13-mm) rod.
4. NPS 3 and NPS 5 (DN 80 and DN 125): 10 feet (3 m) with 1/2-inch (13-mm) rod.
5. NPS 6 (DN 150): 10 feet (3 m) with 5/8-inch (16-mm) rod.
6. NPS 8 (DN 200): 10 feet (3 m) with 3/4-inch (19-mm) rod.

M. Install supports for vertical copper tubing every 10 feet (3 m).

N. Install hangers for [**ABS**] [**and**] [**PVC**] piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
2. NPS 3 (DN 80): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
3. NPS 4 and NPS 5 (DN 100 and DN 125): 48 inches (1200 mm) with 5/8-inch (16-mm) rod.
4. NPS 6 and NPS 8 (DN 150 and DN 200): 48 inches (1200 mm) with 3/4-inch (19-mm) rod.
5. NPS 10 and NPS 12 (DN 250 and DN 300): 48 inches (1200 mm) with 7/8-inch (22-mm) rod.

O. Install supports for vertical [**ABS**] [**and**] [**PVC**] piping every 48 inches (1200 mm).

P. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

## 3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
5. Install horizontal backwater valves [**with cleanout cover flush with floor**] [**in pit with pit cover flush with floor**].
6. Comply with requirements for [**backwater valves**] [**cleanouts**] [**and**] [**drains**] specified in Division 22 Section "Sanitary Waste Piping Specialties."
7. Equipment: Connect drainage piping as indicated. Provide shutoff valve if indicated and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 (DN 65) and larger.

D. Connect force-main piping to the following:

1. Sanitary Sewer: To exterior force main.
2. Sewage Pump: To sewage pump discharge.

E. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

F. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.

## 3.8 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

## 3.9 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Re-inspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for re-inspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water (30 kPa). From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg (250 Pa). Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

E. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
2. Cap and subject piping to static-water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
4. Prepare reports for tests and required corrective action.

## 3.10 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

D. Exposed [**ABS**] [**and**] [**PVC**] Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

## 3.11 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping [**NPS 4 (DN 100) and smaller**] shall be [**any of**] the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless, cast-iron soil pipe and fittings [**and sovent stack fittings**]; [**CISPI**] [**heavy-duty**] hubless-piping couplings; and coupled joints.
3. Galvanized-steel pipe, drainage fittings, and threaded joints.
4. Stainless-steel pipe and fittings, sealing rings, and gasketed joints.
5. Copper DWV tube, copper drainage fittings, and soldered joints.
6. [**Solid-wall**] [**Cellular-core**] ABS pipe, ABS sockets fittings, and solvent-cemented joints.
7. [**Solid-wall**] [**Cellular-core**] PVC pipe, PVC sockets fittings, and solvent-cemented joints.
8. Dissimilar Pipe-Material Couplings: [**Unshielded**] [**Shielded**], non-pressure transition couplings.

C. Aboveground, soil and waste piping [**NPS 5 (DN 125) and larger**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless, cast-iron soil pipe and fittings [**and solvent stack fittings**]; [**CISPI**] [**heavy-duty**] hubless-piping couplings; and coupled joints.
3. Galvanized-steel pipe, drainage fittings, and threaded joints.
4. Stainless-steel pipe and fittings, sealing rings, and gasketed joints.
5. [**Solid-wall**] [**Cellular-core**] PVC pipe, PVC sockets fittings, and solvent-cemented joints.
6. Dissimilar Pipe-Material Couplings: [**Unshielded**] [**Shielded**], non-pressure transition couplings.

D. Aboveground, vent piping [**NPS 4 (DN 100) and smaller**] shall be [**any of**] the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless, cast-iron soil pipe and fittings; [**CISPI**] [**heavy-duty**] hubless-piping couplings; and coupled joints.
3. Galvanized-steel pipe, drainage fittings, and threaded joints.
4. Stainless-steel pipe and fittings gaskets and gasketed joints.
5. Copper DWV tube, copper drainage fittings, and soldered joints.

    a. Option for Vent Piping, NPS 2-1/2 and NPS 3-1/2 (DN 65 and DN 90): Hard copper tube, Type M (Type C); copper pressure fittings; and soldered joints.

6. [**Solid-wall**] [**Cellular-core**] ABS pipe, ABS sockets fittings, and solvent-cemented joints.
7. [**Solid-wall**] [**Cellular-core**] PVC pipe, PVC sockets fittings, and solvent-cemented joints.
8. Dissimilar Pipe-Material Couplings: [**Unshielded**] [**Shielded**], non-pressure transition couplings.

E. Aboveground, vent piping [**NPS 5 (DN 125) and larger**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless, cast-iron soil pipe and fittings; [**CISPI**] [**heavy-duty**] hubless-piping couplings; and coupled joints.
3. Galvanized-steel pipe, drainage fittings, and threaded joints.
4. [**Solid-wall**] [**Cellular-core**] PVC pipe, PVC sockets fittings, and solvent-cemented joints.
5. Dissimilar Pipe-Material Couplings: [**Unshielded**] [**Shielded**], non-pressure transition couplings.

F. Underground, soil, waste, and vent piping [**NPS 4 (DN 100) and smaller**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. [**Extra Heavy**] [**Service**] class, cast-iron soil piping; [**gaskets; and gasketed**] [**calking materials; and calked**] joints.
2. Hubless, cast-iron soil pipe and fittings; [**CISPI**] [**heavy-duty**] [**cast-iron**] hubless-piping couplings; and coupled joints.
3. Stainless-steel pipe and fittings, gaskets, and gasketed joints.
4. [**Solid wall**] [**Cellular-core**] ABS pipe, ABS sockets fittings, and solvent-cemented joints.
5. [**Solid wall**] [**Cellular-core**] PVC pipe, PVC sockets fittings, and solvent-cemented joints.
6. Dissimilar Pipe-Material Couplings: [**Unshielded**] [**Shielded**], non-pressure transition couplings.

G. Underground, soil and waste piping [**NPS 5 (DN 125) and larger**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. [**Extra Heavy**] [**Service**] class, cast-iron soil piping; [**gaskets; and gasketed**] [**calking materials; and calked**] joints.
2. Hubless, cast-iron soil pipe and fittings; [**CISPI**] [**heavy-duty**] [**cast-iron**] hubless-piping couplings; coupled joints.
3. [**Solid-wall**] [**Cellular-core**] PVC pipe; PVC socket fittings; and solvent-cemented joints.
4. Dissimilar Pipe-Material Couplings: [**Unshielded**] [**Shielded**], non-pressure transition couplings.

H. Aboveground sanitary-sewage force mains [**NPS 1-1/2 and NPS 2 (DN 40 and DN 50)**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. Hard copper tube, Type L (Type B); copper pressure fittings; and soldered joints.
2. Galvanized-steel pipe, pressure fittings, and threaded joints.

I. Aboveground sanitary-sewage force mains [**NPS 2-1/2 to NPS 6 (DN 65 to DN 150)**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. Hard copper tube, Type L (Type B); copper pressure fittings; and soldered joints.
2. Galvanized-steel pipe, pressure fittings, and threaded joints.
3. Grooved-end, galvanized-steel pipe; grooved-joint, galvanized-steel-pipe appurtenances; and grooved joints.

J. Underground sanitary-sewage force mains [**NPS 4 (DN 100) and smaller**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. [**Hard**] [**Soft**] copper tube, Type L (Type B); [**wrought-**] copper pressure fittings; and soldered joints.
2. Ductile-iron, mechanical-joint piping and mechanical joints.
3. Ductile-iron, push-on-joint piping and push-on joints.
4. Ductile-iron, grooved-joint piping and grooved joints.
5. Fitting-type transition coupling for piping smaller than NPS 1-1/2 (DN 40) and pressure transition coupling for NPS 1-1/2 (DN 40) and larger if dissimilar pipe materials.

K. Underground sanitary-sewage force mains [**NPS 5 (DN 125) and larger**] <**Insert pipe size range**> shall be[ **any of**] the following:

1. Hard copper tube, Type L (Type B); [**wrought-**]copper pressure fittings; and soldered joints.
2. Ductile-iron, mechanical-joint piping and mechanical joints.
3. Ductile-iron, push-on-joint piping and push-on joints.
4. Ductile-iron, grooved-joint piping and grooved joints.
5. Pressure transition couplings if dissimilar pipe materials.

**END OF SECTION 221316**

# EROSION AND SEDIMENT CONTROL:

1. CONTRACTOR TO EMPLOY BEST MANAGEMENT PRACTICES THROUGHOUT CONSTRUCTION IN ORDER TO ENSURE POLLUTION PREVENTION. CONTRACTOR TO COMPLY WITH ALL LOCAL STATE AND OTHER GOVERNMENTAL ENVIRONMENTAL REGULATIONS THROUGHOUT CONSTRUCTION.

2. DURING CONSTRUCTION ALL CATCH BASIN INLETS SHALL BE PROTECTED TO PREVENT SEDIMENT AND DEBRIS FROM ENTERING THE CATCH BASIN.

3. SILT FENCES SHALL BE INSTALLED AS NECESSARY TO CONTROL OR PREVENT DISCHARGE OF SEDIMENT ONTO ADJACENT UNDISTURBED AREAS, OR OFF-SITE AREAS.

4. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE STABILIZED WITHIN A REASONABLE PERIOD OF TIME TO ASSURE MINIMUM EROSION OF SOILS.

5. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

6. ALL EXPOSED AREAS SHALL BE SODDED AS SPECIFIED WITHIN 30 DAYS OF FINAL GRADING.

7. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.

8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.

9. CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.

10. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY CITY, COUNTY, AND STATE OF FLORIDA ON SITE INSPECTION, AT NO ADDITIONAL COST TO THE OWNER.

11. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES.

12. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.

13. BURNING OF DEBRIS WILL NOT BE ALLOWED.

14. CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.

15. CONTRACTOR IS TO PROVIDE EROSION CONTROL/SEDIMENTATION BARRIER (HAY BALES OR SILTATION CURTAIN) TO PREVENT SILTATION OF ADJACENT PROPERTY, STREETS, STORM SEWERS AND WATER WAYS. IN ADDITION CONTRACTOR SHALL PLACE STRAW, MULCH OR OTHER SUITABLE MATERIAL ON GROUND IN AREAS WHERE CONSTRUCTION RELATED TRAFFIC IS TO ENTER AND EXIT SITE IF IN THE OPINION OF THE ENGINEER AND/OR LOCAL AUTHORITIES IF EXCESSIVE QUANTITIES OF EARTH ARE TRANSPORTED OFF-SITE EITHER BY NATURAL DRAINAGE OR BY VEHICULAR TRAFFIC. THE CONTRACTOR IS TO REMOVE AND CLEAN SAID EARTH TO THE SATISFACTION OF THE ENGINEER AND/OR AUTHORITIES. EROSION CONTROL BARRIER SHALL BE ESTABLISHED AS THE FIRST ITEM OF WORK.

16. THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S STORMWATER PERMITTING PROGRAM APPLIES TO ALL CONSTRUCTION ACTIVITY THAT: 1) CONTRIBUTE STORMWATER DISCHARGES TO SURFACE WATER OF THE STATE OR INTO A MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) 2) DISTURBS ONE OR MORE ACRES OF LAND OR 3) LESS THAN ONE ACRE IS INCLUDED IF THE ACTIVITY IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT THAT WILL MEET OR EXCEED THE ONCE ACRE THRESHOLD. DISTURB INCLUDES CLEARING, GRADING AND EXCAVATING.

17. FOR CONSTRUCTION ACTIVITY THAT IS SUBJECT TO THE NPDES FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S STORMWATER PERMITTING PROGRAM, THE CONTRACTOR SHALL:

    17.1. OBTAIN A GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION DOCUMENT 62-621.300(4)(A).

    17.2. COMPLY WITH ALL REQUIREMENTS OF THE GENERIC PERMIT.

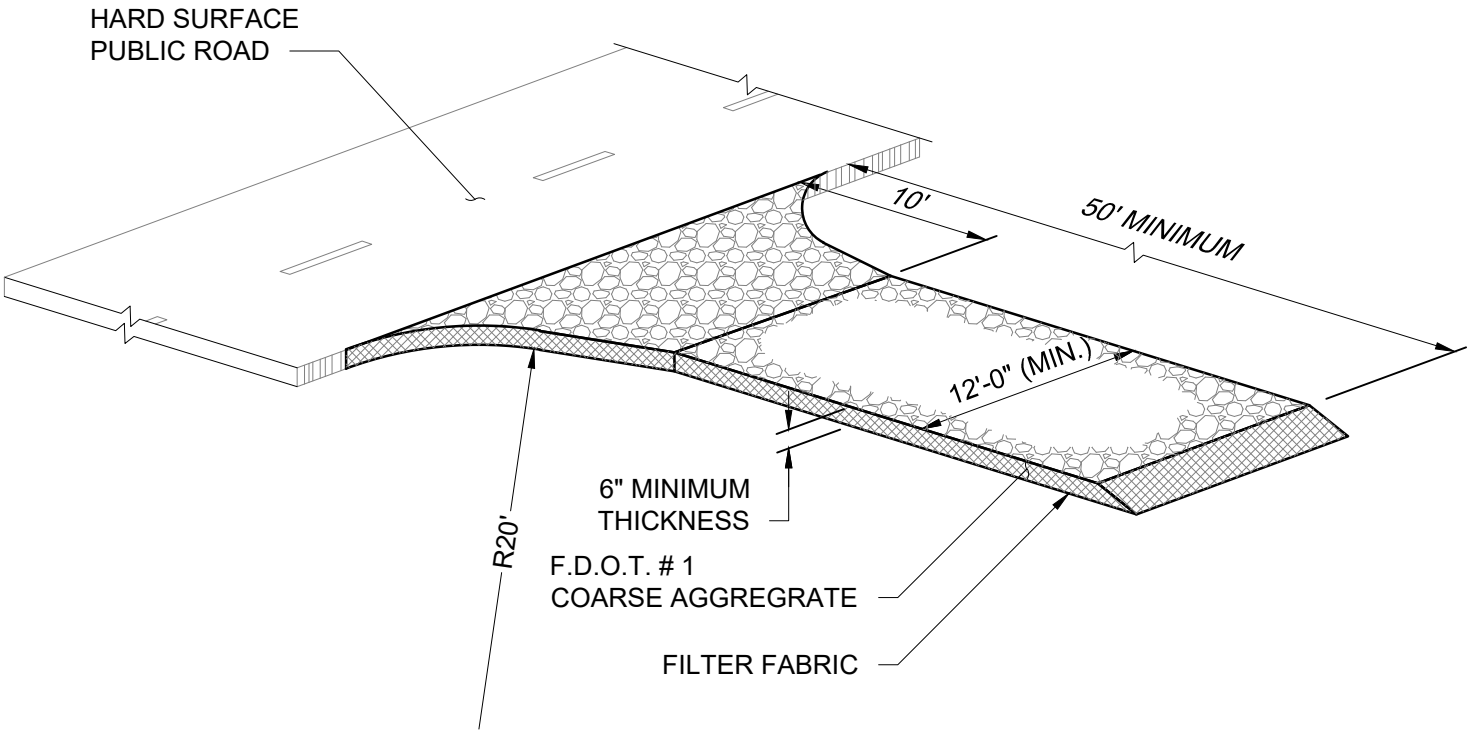
    17.3. DEVELOP AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN (SWPPP).

    17.4. COMPLETE A NOTICE OF INTENT (NOI) FLORIDA DEPARTMENT OF ENVIORNMENTAL PROTECTION FORM 62-621.300(4)(B) IN ITS ENTIRETY USING THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S WEBSITE.

18. SUBMIT COPIES OF THE SWPPP AND THE NOI TO THE ENGINEER AS INFORMATIONAL RECORDS. THESE SUBMITTALS WILL NOT BE REVIEWED BY THE ENGINEER.

19. CONTRACTOR TO CLEAN AND REPAIR ALL EXISTING STORMWATER INFRASTRUCTURE THAT IS IMPACTED BY CONSTRUCTION ACTIVITIES, BEFORE LEAVING THE JOBSITE.

20. CONTRACTOR TO REMOVE ALL FILTER FABRIC AND POLLUTION PREVENTION ITEMS BEFORE THE FINAL WALK-THROUGH.




NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABLIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
700 NW 19th Avenue, Fort Lauderdale, Florida 33301

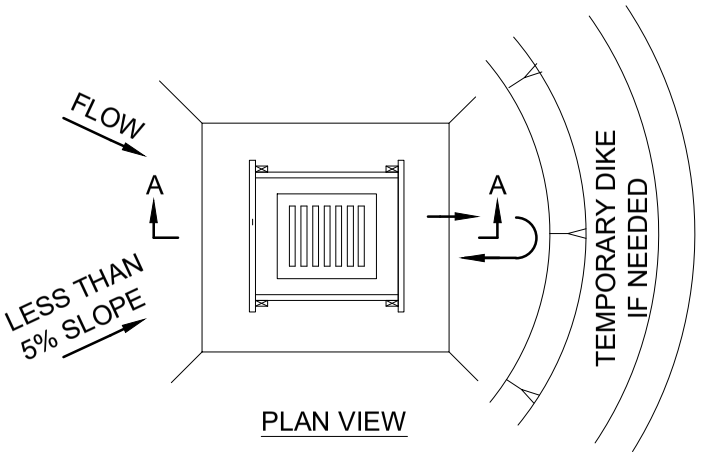
GRAVEL CONSTRUCTION ENTRANCE

DETAIL NO.
ESC
002
REVISED:
2017/07/06

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
700 NW 19th Avenue, Fort Lauderdale, Florida 33301

# DROP INLET PROTECTION - SEDIMENT BARRIER

DETAIL NO. ESC 004
REVISED: 2016/09/26



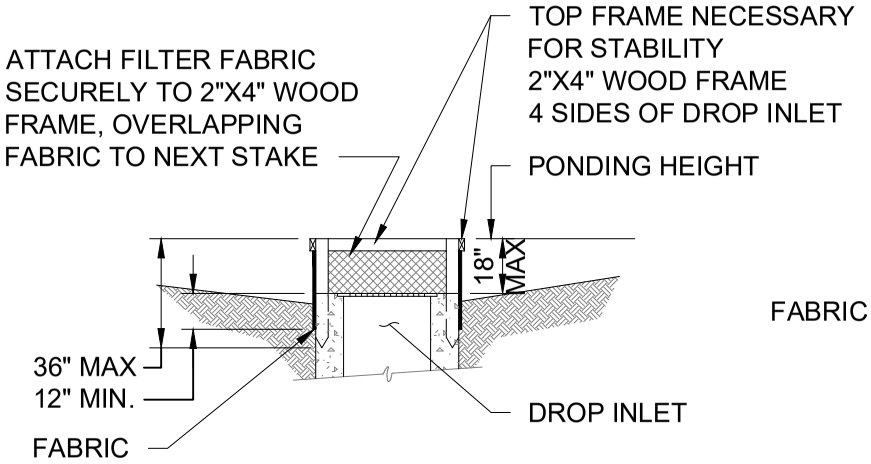

PLAN VIEW

## CONTRACTOR'S RESPONSIBILITY

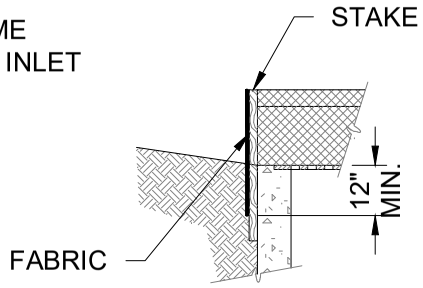
EROSION AND SEDIMENTATION CONTROLS ARE PERFORMANCE BASED CRITERIA. IF THE BMPS PROVIDED DO NOT PREVENT SOILS FROM LEAVING A CONSTRUCTION SITE, THEN THE CONTRACTOR IS REQUIRED TO EMPLOY ADDITIONAL PROCEDURES TO PROVIDE CLEAN RUNOFF FROM A SITE.

NOTES:

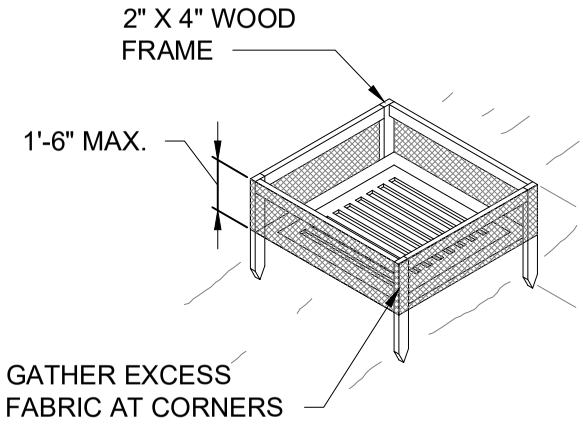
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%).
2. USE 2"X4" WOOD OR EQUIVALENT METAL STAKES. (3' MIN. LENGTH).
3. INSTALL 2"X4" WOOD TOP FRAME TO INSURE STABILITY.
4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET.
   A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.
5. MIRAFI OR APPROVED EROSION CONTROL FABRIC SHALL BE WRAPPED AROUND GRATE.
6. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.




SECTION A-A



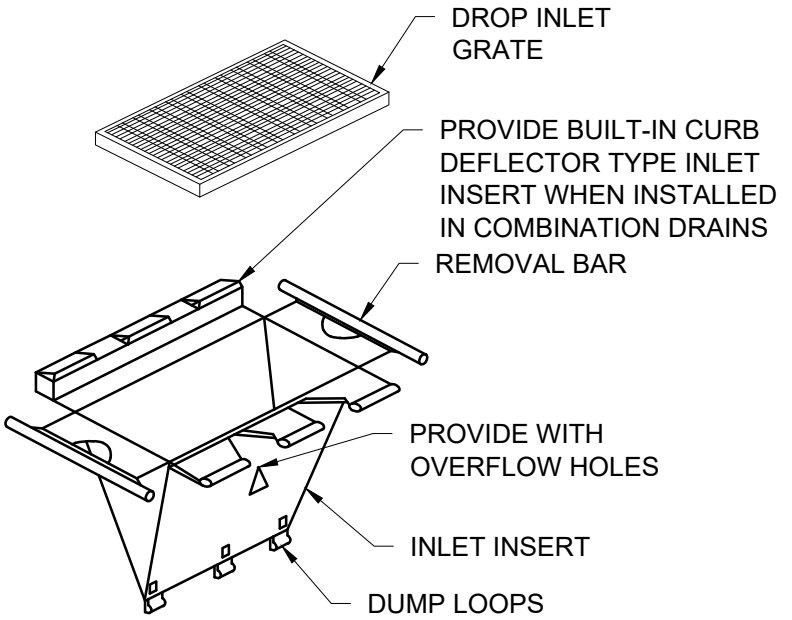

DETAIL OF STAKE □
FABRIC ORIENTATION

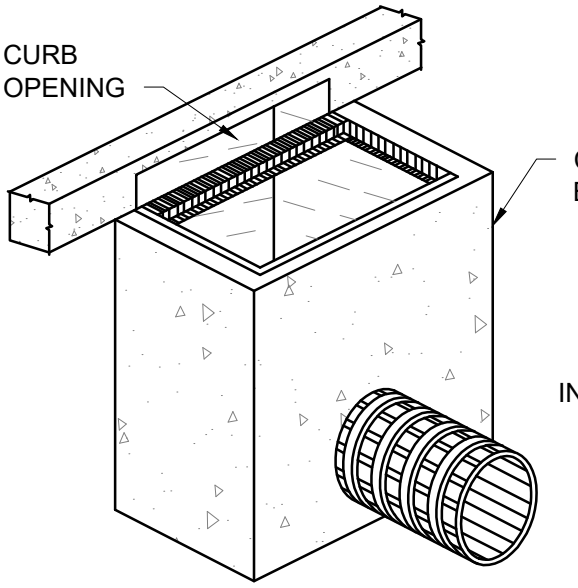



ISOMETRIC VIEW

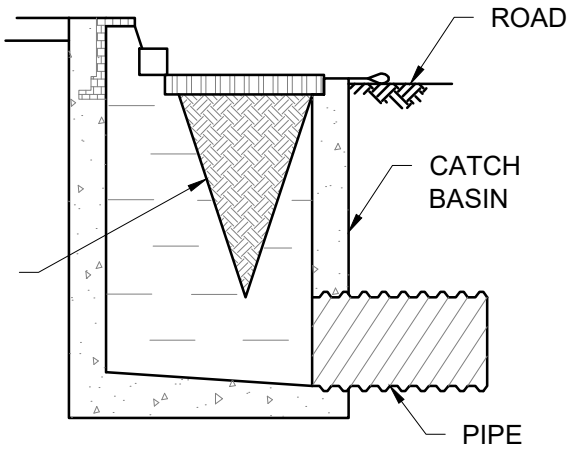


ESC004 - DROP INLET PROTECTION - SEDIMENT BARRIER Tuesday, □□ 20, 2016
City of Fort Lauderdale
Bid 12204-293



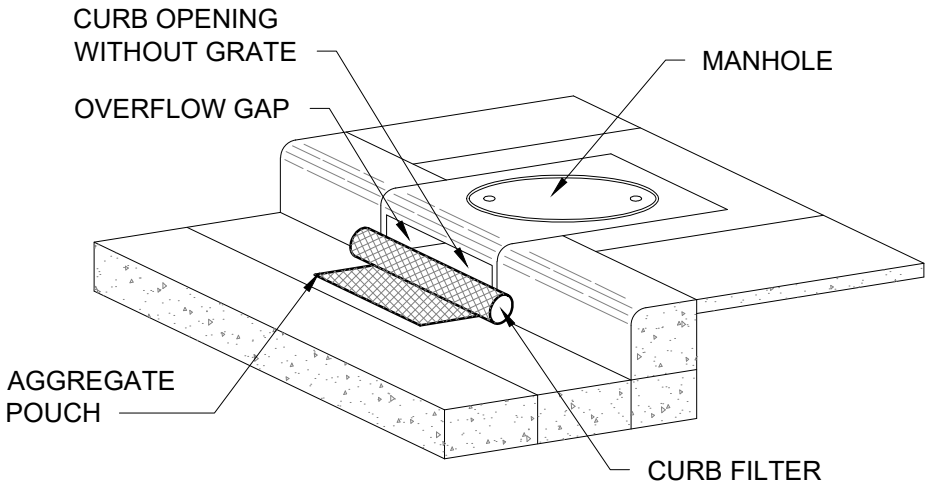

EXPLODED ISOMETRIC VIEW




SIDE VIEW INSTALLED

NOTES:

1. THE INLET INSERT SHALL BE A SEDIMENT CONTROL DEVICE DESIGNED FOR DROP INLETS OR COMBINATION DRAINS WHERE A DROP INLET IS COUPLED WITH A CURB INLET.
2. THE INLET INSERT SHALL BE MADE OF A PERMEABLE GEOTEXTILE THAT ALLOWS WATER TO PASS BUT PREVENTS SILT AND SEDIMENT FROM CLOGGING THE DRAIN SYSTEM.
3. THE CONTRACTOR SHALL CLEAN AND INSPECT REGULARLY AND AFTER EVERY MAJOR RAIN EVENT.
4. INLET INSERTS SHALL BE “SILTSACK” BY ACF ENVIRONMENTAL, OR EQUAL. SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS.




NOTES:

1. INSTALL CURB FILTERS AT ALL INLETS WITHOUT GRATES TO KEEP SILT, SEDIMENT AND CONSTRUCTION DEBRIS OUT OF THE STORM SYSTEM

2. THE CURB FILTER SHALL BE DANDY CURB AS MANUFACTURED BY DANDY PRODUCTS INC., OR EQUAL. SUBMIT SHOP A SHOP DRAWING FOR THE CURB FILTERS.

3. THE CURB FILTER SHALL FORM OF A CYLINDRICAL TUBE PLACED IN FRONT OF AND EXTENDING BEYOND THE INLET OPENING ON BOTH SIDES.

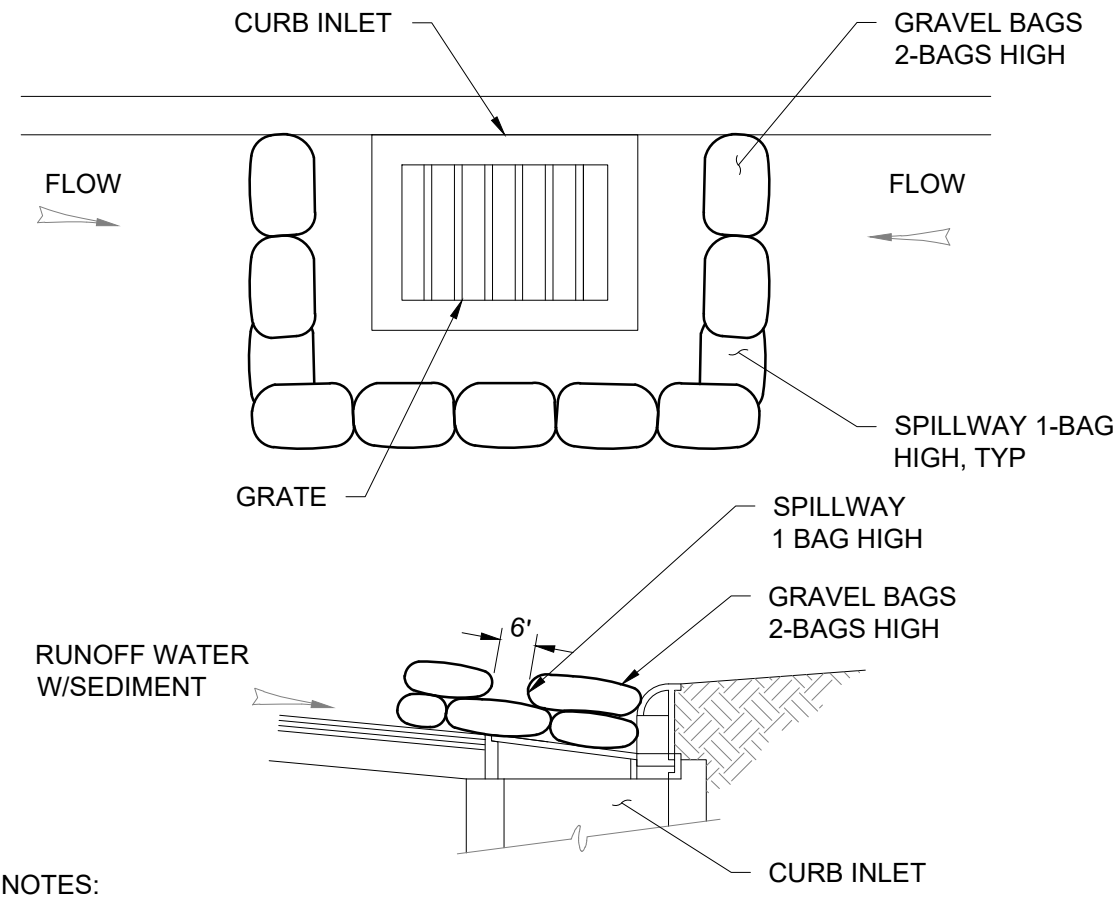
4. THE CURB FILTER SHALL HAVE A POUCH ON THE STREET SIDE OF THE UNIT FOR STONE AGGREGATE TO HOLD THE FILTER IN PLACE.

5. THE CURB FILTER SHALL BE CONSTRUCTED OF A HIGH VISIBILITY ORANGE MONOFILAMENT FABRIC.

6. FILL POUCH WITH FDOT #57 STONE AGGREGATE TO A LEVEL (AT LEAST HALF-FULL) THAT WILL KEEP UNIT IN PLACE DURING A RAIN EVENT AND CREATE A SEAL BETWEEN THE CURB FILTER AND THE SURFACE OF THE STREET.

7. CENTER THE UNIT AGAINST CURB OR MEDIAN INLET OPENING SO THAT THE CURB SIDE OF THE UNIT CREATES A SEAL WITH THE CURB OR MEDIAN BARRIER AND INLET STRUCTURE. THERE WILL BE APPROXIMATELY TWELVE (12) INCHES OF THE INLET PROTECTION UNIT OVERHANGING ON EACH SIDE OF THE OPENING.

8. THE CONTRACTOR SHALL REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF UNIT AFTER EACH RAIN EVENT.




NOTES:

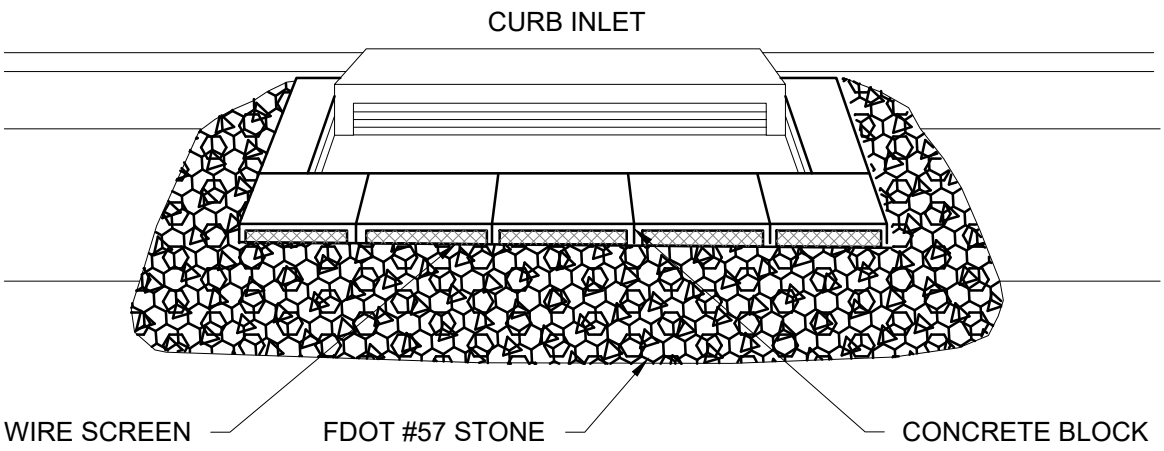
1. A SPILLWAY SHALL BE DESIGNATED FOR EACH DIRECTION OF APPROACHING FLOW AS SHOWN. THE SPILLWAY SHALL BE LOCATED TO ALLOW THE MAXIMUM AMOUNT OF STORMWATER TO POOL WITHOUT FLOODING AREAS UP GRADE OF THE INLET.

2. FOR INLETS THAT ARE NOT ADJACENT TO CURBS, PLACE GRAVEL BAGS ONE BAG HIGH AROUND THE ENTIRETY OF THE INLET TO ACCOMMODATE FLOW FROM ALL DIRECTIONS.

3. BAG MATERIAL: BAGS SHALL BE WOVEN POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE FABRIC, MINIMUM UNIT WEIGHT FOUR OUNCES PER SQUARE YARD, MULLEN BURST STRENGTH EXCEEDING 300 PSI IN CONFORMANCE WITH THE REQUIREMENTS IN ASTM D3786, AND ULTRAVIOLET STABILITY EXCEEDING 70% IN CONFORMANCE WITH THE REQUIREMENTS IN ASTM D4355.

4. BAG SIZE: EACH GRAVEL-FILLED BAG SHALL BE 18-INCHES X 12-INCHES X 3-INCHES AND HAVE A MASS OF APPROXIMATELY 33 LBS. ALTERNATIVE BAG SIZES SHALL BE CONSIDERED BASED ON LOCALLY AVAILABLE MATERIALS.

5. FILL MATERIAL: GRAVEL SHALL BE PEA GRAVEL 3/8 INCHES IN DIAMETER AND SHALL BE CLEAN AND FREE OF CLAY BALLS, ORGANIC MATTER, OR OTHER DELETERIOUS MATERIALS.

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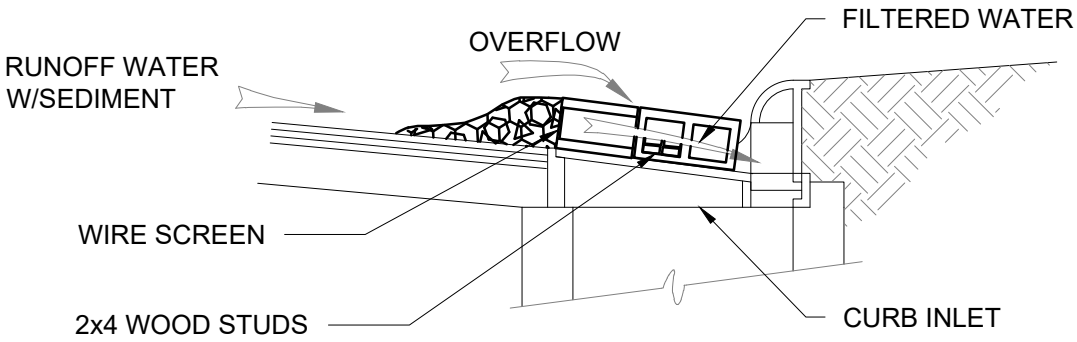



SECTION

NOTES:

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET SUPPORT.

2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.

3. USE CLEAN STONE OR GRAVEL 1/2 - 3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.

4. FOR INLETS IN ROADWAYS WITH HEAVY TRAFFIC CONDITIONS PREFABRICATED FILTER INSERTS MAY BE USED.

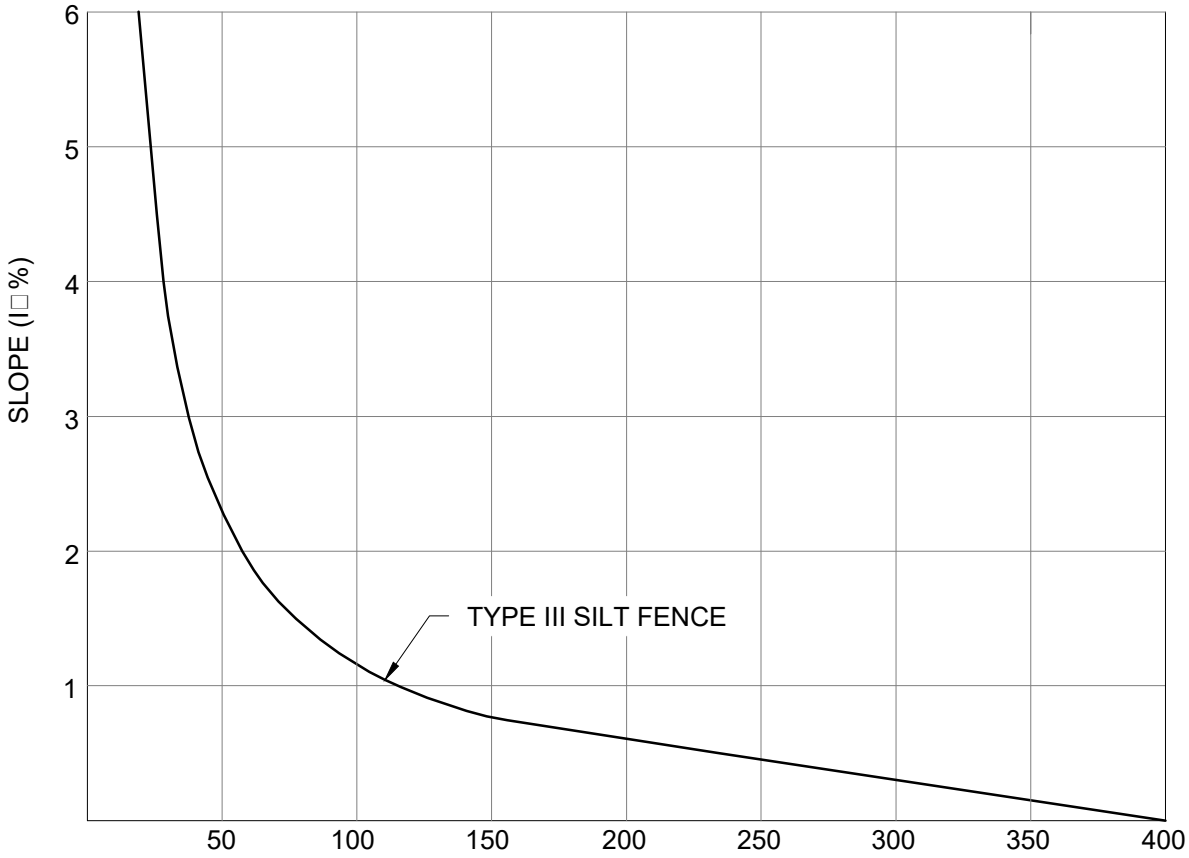
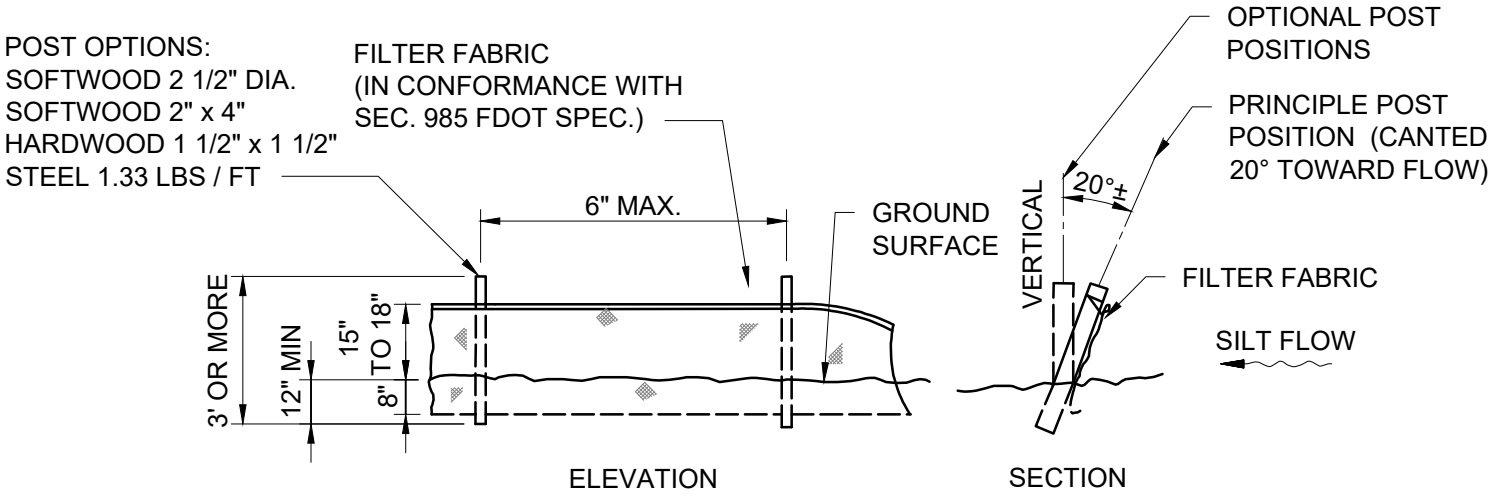
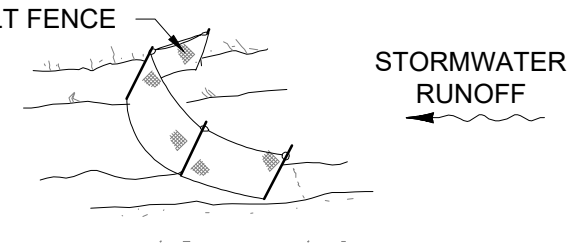


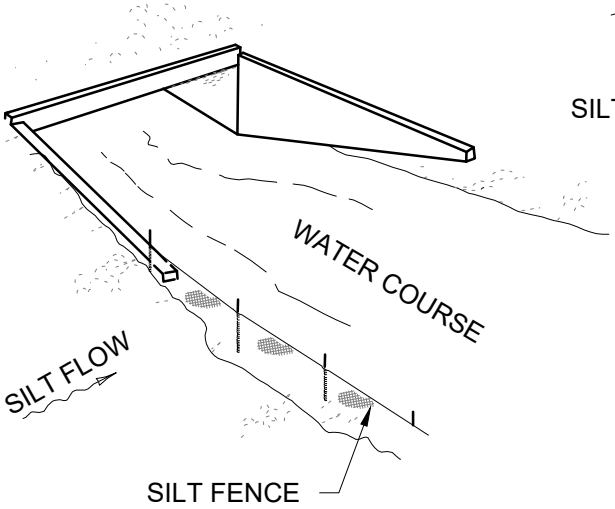

CHART 1: SILT FENCE SPACING

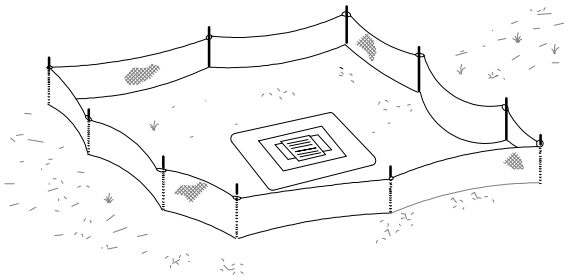



TYPE III SILT FENCE



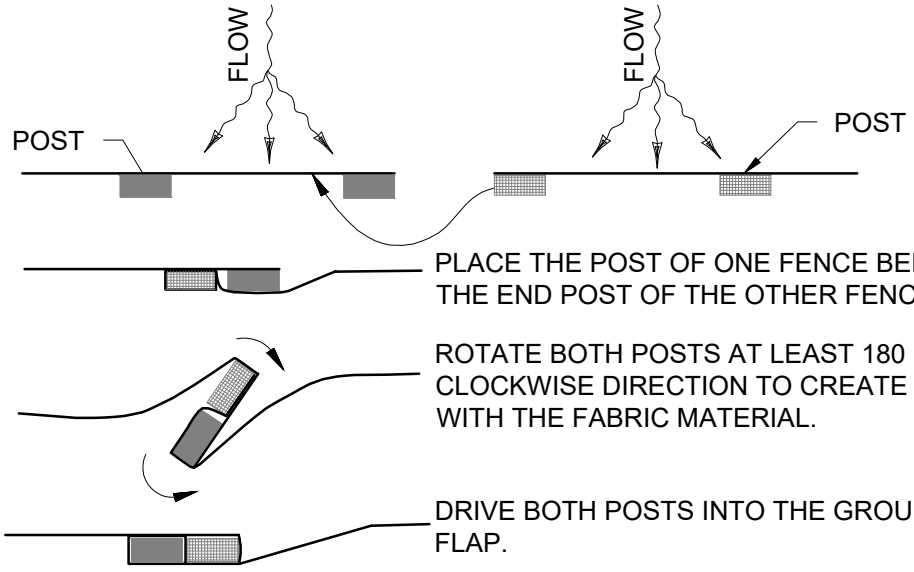

SILT FENCE PROTECTION IN DITCHES
WITH INTERMITTENT FLOW



SILT FENCE PROTECTION AROUND
DITCH BOTTOM INLETS

SILT FENCE APPLICATIONS




PLAN VIEW

JOINING TWO SILT FENCES

NOTES:

1. WHERE USED IN DITCHES, THE SPACING FOR TYPE III SILT FENCE SHALL BE IN ACCORDANCE WITH CHART 1.

2. DO NOT CONSTRUCT SILT FENCES ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

3. WHERE USED AS SLOPE PROTECTION . SILT FENCE IS TO BE CONSTRUCTED ON 0% LONGITUDINAL GRADE TO AVOID CHANNELIZING RUNOFF ALONG THE LENGTH OF THE FENCE.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
Avenue, Fort Lauderdale, Florida 33301

# TURBIDITY BARRIER - FLOATING

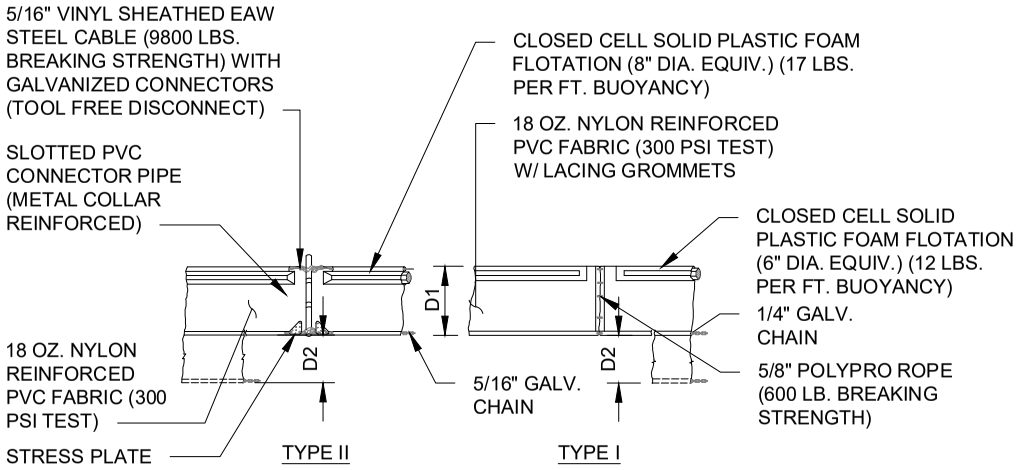
DETAIL NO. ESC 011
REVISED: 2017/07/06

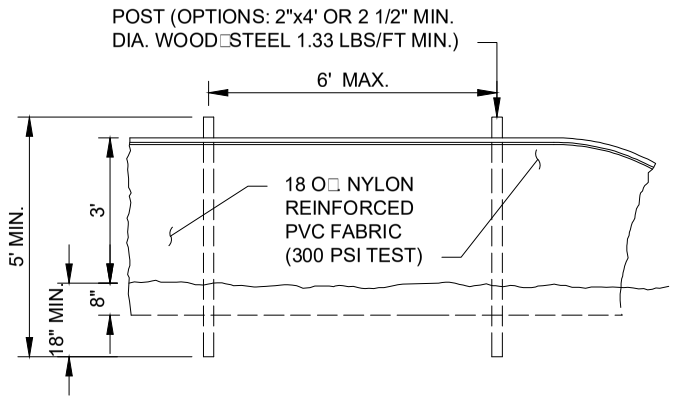


ESC011 - TURBIDITY BARRIER - FLOATING Saturday, July 08, 2017

City of Fort Lauderdale

Bid 12204-293

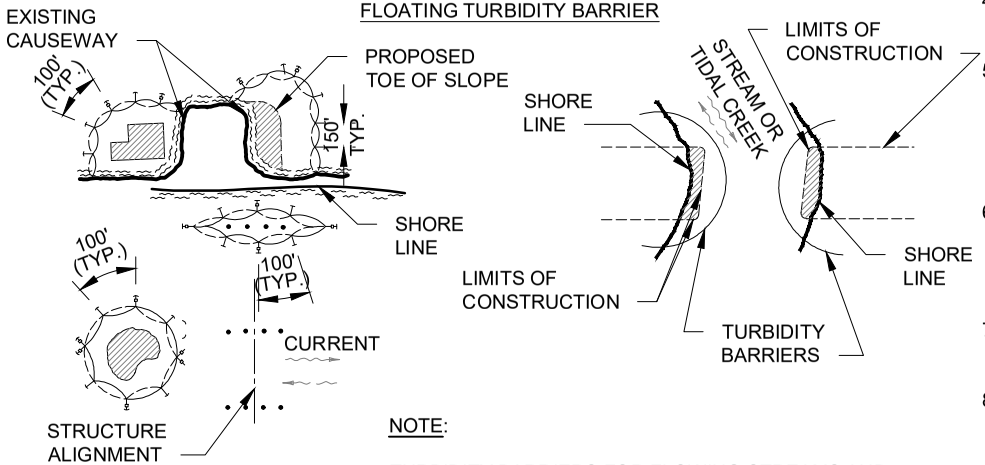



STAKED TURBIDITY BARRIER

D1 □5' STD. (SINGLE PANEL FOR DEPTHS 5' OR LESS).
D2 □5' STD. (ADDITIONAL PANEL FOR DEPTHS □ 5').
CURTAIN TO REACH BOTTOM UP TO DEPTHS OF 10 FEET.
TWO (2) PANELS TO BE USED FOR DEPTHS GREATER THAN 10 FEET UNLESS SPECIAL DEPTH CURTAINS SPECIFICALLY CALLED FOR IN THE PLANS OR AS DETERMINED BY THE ENGINEER.

NOTE:
COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.




LEGEND
- PILE LOCATIONS
- DREDGE OR FILL AREA
- MOORING BUOY W/ANCHOR
- ANCHOR
- BARRIER MOVEMENT DUE TO CURRENT ACTION

NOTE:
TURBIDITY BARRIERS FOR FLOWING STREAMS AND TIDAL CREEKS MAY BE EITHER FLOATING, OR STAKED TYPES OR ANY COMBINATIONS OF TYPES THAT WILL SUIT SITE CONDITIONS AND MEET EROSION CONTROL AND WATER QUALITY REQUIREMENTS. THE BARRIER TYPE(S) WILL BE AT THE CONTRACTOR'S OPTION UNLESS OTHERWISE SPECIFIED IN THE PLANS. POSTS IN STAKED TURBIDITY BARRIERS TO BE INSTALLED IN VERTICAL POSITION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TURBIDITY APPLICATIONS

NOTES:

1. TURBIDITY BARRIERS ARE TO BE USED IN ALL PERMANENT BODIES OF WATER REGARDLESS OF WATER DEPTH.
2. NUMBER AND SPACING OF ANCHORS DEPENDENT ON CURRENT VELOCITIES.
3. DEPLOYMENT OF BARRIER AROUND PILE LOCATIONS MAY VARY TO ACCOMMODATE CONSTRUCTION OPERATIONS.
4. NAVIGATION MAY REQUIRE SEGMENTING BARRIER DURING CONSTRUCTION OPERATIONS.
5. TYPE I TURBIDITY BARRIERS SHALL BE DESIGNED BY THE MANUFACTURER FOR USE IN CALM WATER AREAS SUCH AS SWALES, DITCHES, CANALS, SMALL PONDS, LAKES AND HARBORS. TYPE I TURBIDITY BARRIERS SHALL BE USED IN AREAS WHERE THERE IS NO CURRENT AND THE AREA IS SHELTERED FROM WIND AND WAVES.
6. TYPE II TURBIDITY BARRIERS ARE DESIGNED BY THE MANUFACTURER FOR AREAS WITH MOVING WATER, CURRENTS, WAVES OR TIDE. TYPE II TURBIDITY BARRIERS SHALL BE USED IN WATER LOCATIONS WITH WAVES UP TO TWO FEET (2'), MODERATE WIND, AND CURRENTS UP TO 2 KNOTS OR 3.5 FEET PER SECOND.
7. STAKED BARRIERS ARE CONTINUOUS PANELS OF PVC FABRIC THAT CONTAIN STORMWATER RUNOFF OR RE-DIRECT IT TO CHANNELS OR RETENTION AREAS.
8. CONSTRUCTION SPECIFICATIONS: THE AREA OF INSTALLATION FOR THE PROPOSED TURBIDITY BARRIER SHALL BE INSPECTED FOR OBSTACLES AND IMPEDIMENTS THAT COULD DAMAGE THE BARRIER OR IMPAIR ITS EFFECTIVENESS TO RETAIN SEDIMENTS. REMOVE MATERIALS, OBSTACLES AND IMPEDIMENTS THAT COULD DAMAGE OR IMPAIR THE EFFECTIVENESS OF THE TURBIDITY BARRIER.
9. MAINTENANCE: THE TURBIDITY BARRIER SHALL BE INSPECTED DAILY AND REPAIRED OR REPLACED IMMEDIATELY IF DAMAGED. IT IS NOT NORMALLY NECESSARY TO REMOVE SEDIMENT DEPOSITED BEHIND THE CURTAIN. HOWEVER, WHEN NECESSARY, REMOVAL SHALL BE DONE BY HAND PRIOR TO REMOVAL OF THE BARRIER. ALL REMOVED SILT SHALL BE STABILIZED AWAY FROM THE WATERBODY. THE BARRIER SHALL BE REMOVED SLOWLY AND BY CAREFULLY PULLING IT TOWARD THE CONSTRUCTION SITE TO MINIMIZE THE RELEASE OF SEDIMENTS.

# TRAFFIC CONTROL PLAN NOTES:

1. THE TRAFFIC CONTROL PLANS FOR THE PROJECT SHALL COMPLY WITH THE LATEST EDITION OF THE FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS, INDEX NO. 600-660. MUTCD AND THE STANDARD SPECIFICATIONS. THE CONTRACTOR'S RESPONSE TIME TO ALL REPORTED MALFUNCTIONS OF TRAFFIC SIGNALS WITHIN THE PROJECT LIMITS SHALL BE NO MORE THAN TWO (2) HOURS AND SHALL RESTORE ALL MALFUNCTIONING TRAFFIC SIGNAL EQUIPMENT TO ITS LEVEL OF OPERATION PRIOR TO THE MALFUNCTIONING WITHIN TWENTY-FOUR (24) HOURS. DURING THIS TIME THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE TEMPORARY TRAFFIC CONTROL DEVICES, FLAGGLER PERSONNEL AND LAW ENFORCEMENT PERSONNEL AS NECESSARY TO MAINTAIN A SAFE AND EFFICIENT FLOW OF TRAFFIC AT THE AFFECTED WORK ZONE. THE ENGINEER OR THE CITY OF FORT LAUDERDALE SHALL APPROVE ALL MODIFICATIONS PRIOR TO THEIR IMPLEMENTATION.

2. THE CONTRACTOR SHALL MAINTAIN PROPER OPERATION OF ALL TRAFFIC SIGNAL LOOP ASSEMBLIES AND LOOP DETECTORS WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL CORRECT ALL LOOP ASSEMBLY/DETECTOR MALFUNCTIONS WITHIN 24 HOURS OF NOTIFICATION OF SUCH MALFUNCTIONS BY THE ENGINEER.

3. THE AGENCY RESPONSIBLE FOR MAINTENANCE OF THE TRAFFIC SIGNALS AND RELATED EQUIPMENT IS BROWARD COUNTY TRAFFIC ENGINEERING.

4. A REGULATORY SPEED OF 25 MPH SHALL BE POSTED WITHIN THE LIMITS OF THE WORK ZONE.

5. EXISTING SIGNS AND PAVEMENT MARKINGS THAT CONFLICT WITH CONSTRUCTION SIGNS AND MARKINGS SHALL BE REMOVED DURING CONSTRUCTION. ALL EXISTING SIGNS THAT ARE REMOVED SHALL BE STOCKPILED IN A SECURE PLACE AND REINSTALLED AFTER CONSTRUCTION. REMOVE AND REPLACE ANY GROUND MOUNT SIGN BY USE OF INDEX NO. 611.

6. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE PATTERNS AND PREVENT ADVERSE FLOODING OF THE TRAVEL LANES DURING CONSTRUCTION.

7. THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE CITY OF FORT LAUDERDALE FOR ANY AND ALL CONSTRUCTION ACTIVITIES TO BE PERFORMED AT NIGHT. NO LANE CLOSURE SHALL BE ALLOWED BETWEEN THE HOURS OF 6:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM, MONDAY THROUGH FRIDAY UNLESS APPROVED BY THE ENGINEER.

8. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY TWO (2) BUSINESS DAYS IN ADVANCE OF ANY EXCAVATION INVOLVING ITS UTILITIES SO THAT A COMPANY REPRESENTATIVE CAN BE PRESENT. THE LOCATION OF THE UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION. SEE SPECS FOR LIST OF UTILITY COMPANIES.

9. TRAFFIC CONTROL ON ALL COUNTY RIGHTS-OF-WAY SHALL MEET THE ADDITIONAL REQUIREMENTS OF THE BROWARD COUNTY ENGINEERING DEPARTMENT.

10. CONTRACTOR SHALL PREPARE AND SUBMIT MAINTENANCE OF TRAFFIC PLAN (MOT) WHERE REQUIRED BY FEDERAL, STATE, COUNTY, OR LOCAL AGENCIES HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN ALL REQUIRED APPROVALS AND PERMITS ASSOCIATED WITH THE MOT'S. ALL MOT'S TO BE ATS CERTIFIED.

11. THE CONTRACTOR SHALL ALSO COORDINATE THE CONSTRUCTION SCHEDULE WITH FDOT, BROWARD COUNTY AND THE CITY OF FORT LAUDERDALE TO AVOID LANE CLOSURES WHICH WOULD ADVERSELY AFFECT TRAFFIC DURING RUSH HOUR.

# FDOT GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION WITHIN THE FDOT RIGHT-OF-WAY SHALL CONFORM TO FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (2010 EDITION). STANDARD SPECIFICATIONS (2010 EDITION) AND THE SUPPLEMENTS THERETO.

2. THE APPLICANT'S ENGINEER RESPONSIBLE FOR CONSTRUCTION INSPECTION SHALL INSURE THAT THE MAINTENANCE OF TRAFFIC PLAN (MOT) FOR THE PROJECT IS IN ACCORDANCE WITH THE APPLICABLE FDOT INDEX NUMBER (600 SERIES) AND THIS DOCUMENT: THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (D.S. DEPARTMENT OF TRANSPORTATION, FHWA).

3. AT THE END OF EACH WORK PERIOD, ANY DROP-OFF IN THE AREA ADJACENT TO THE TRAVEL WAY OF THE STATE ROAD SHALL BE BACKFILLED IN ACCORDANCE WITH STANDARD INDEX 600 OR SHALL BE OTHERWISE PROTECTED WITH TEMPORARY BARRIER WALL AT THE CONTRACTOR'S EXPENSE.

4. IF THE PERMITTED WORK IS ON A ROADWAY THAT HAS BEEN SELECTED AS A HURRICANE OR DISASTER EVACUATION ROUTE, THE APPLICANT, AT THE PRE-CONSTRUCTION CONFERENCE IS REQUIRED TO PRESENT, AS PART OF THE WORK PLAN, AN EMERGENCY FUNCTIONAL RESTORATION PLAN TO ADDRESS EVENTUALITIES SUCH AS HURRICANES.

5. THE CONTRACTOR MUST CALL THE APPROPRIATE COUNTY TRAFFIC ENGINEERING DIVISION, HAVING JURISDICTION OVER THE PROJECT AT LEAST 48 HOURS, BEFORE ANY EXCAVATION WITHIN THE FDOT RIGHT-OF-WAY TO DETERMINE THE LOCATION OF THE EXISTING TRAFFIC SIGNAL INTERCONNECT CABLE.

6. THE LOCATION OF EXISTING UTILITIES SHOWN IS APPROXIMATE ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION DURING CONSTRUCTION. RELOCATION OF UTILITIES SHALL BE COORDINATED WITH UTILITY COMPANIES AFTER IDENTIFICATION OF CONFLICT BY CONTRACTOR. CONTRACTOR WILL NOTIFY ENGINEER IN ADVANCE BEFORE ANY RELOCATION.

7. BEFORE PERMIT APPROVAL AND CONSTRUCTION OF THIS PROJECT, THE APPLICANT MUST CONTACT THE FLORIDA DEPARTMENT OF TRANSPORTATION LOCAL MAINTENANCE OFFICE TO SCHEDULE A PRE-CONSTRUCTION MEETING. THE TELEPHONE NUMBER IS 954-776-4300 OR 1-800-300-8236. THE APPLICANT AT THE EARLIEST CONVENIENT TIME SHALL NOTIFY IN WRITING ALL RIGHT-OF-WAY USERS AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.

8. ALL MOT LANE CLOSURE SIGNS SHALL BE COVERED WHEN LANES ARE NOT CLOSED. NO LANES ARE TO BE CLOSED EXCEPT AT TIMES PRESCRIBED BY THE DEPARTMENT.

9. SODDING SHALL BE IN ACCORDANCE WITH SECTION 575.

10. ALL CURB CUT RAMPS MUST FACE IN THE DIRECTION OF PEDESTRIAN TRAVEL.

11. SPECIFY THE ALPHANUMERIC IDENTIFICATION FOR THE CURB CUT RAMPS PER STANDARD INDEX 304. A COPY OF THE APPROPRIATE DETAIL(S) MUST BE SHOWN ON THE PLANS.

12. FLAGGERS MUST BE PRESENT DURING THE INGRESS AND EGRESS OF CONSTRUCTION VEHICLES TO AND FROM THE PROJECT SITE. WARNING SIGNS MUST BE ERECTED ADVISING MOTORIST OF TRUCKS ENTERING THE HIGHWAY.

# FDOT SCHOOL MAINTENANCE OF TRAFFIC NOTES:

1. THE FOLLOWING AREAS WITHIN THE PROJECT LIMITS ARE DESIGNATED AS SAFE ROUTES TO SCHOOL BY THE BROWARD COUNTY SCHOOL BOARD (AREAS TO BE PROVIDED BY BCTED):
   A. DATA TO BE SUPPLIED BY BCTED
   B. DATA TO BE SUPPLIED BY BCTED

2. WITHIN THESE AREAS THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FOLLOWING REQUIREMENTS:

3. PROVIDE AT LEAST ONE SAFE, WALKABLE PATH THROUGHOUT THE CONSTRUCTION ZONE. IF THE EXISTING WALKING SURFACES CANNOT BE MAINTAINED, THEN A TEMPORARY PATH, A MINIMUM OF 4 FOOT WIDE, SHALL BE PROVIDED. THE SAFE WALK ROUTE SHALL ALSO BE SEPARATED FROM THE CONSTRUCTION ACTIVITY DURING THE ENTIRE LENGTH OF THE PROJECT ENCOMPASSING THE ENTIRE WALK ROUTE WITH PROPER PEDESTRIAN OPENINGS AT DESIGNATED CROSSINGS IN COMPLIANCE WITH FDOT DESIGN STANDARDS INDEX NO. 600 AS WELL AS MEETING ALL ADA REQUIREMENTS. THE CONTRACTOR SHALL ALSO INSTALL OR MODIFY ANY ADDITIONAL PAVEMENT MARKINGS, SIGNAGE OR PEDESTRIAN SIGNALS AS NEEDED IN CONJUNCTION WITH THE TEMPORARY PATH.

4. ON DAYS THAT SCHOOL IS IN SESSION, THE CONTRACTOR'S WORK SCHEDULE WITHIN THE SCHOOL ZONE MAY BE REDUCED BASEDON ACTUAL WORK ACTIVITIES IN THE SCHOOL ZONE. SEE MAINTENANCE OF TRAFFIC PLANS FOR DETAILS ON THE WORK ZONE RESTRICTIONS, IF WARRANTED. ANY CHANGES IN THE MAINTENANCE OF TRAFFIC WORK SCHEDULES WITHIN SCHOOL ZONES SHOULD BEDISCUSSED WITH THE SPECIAL PROJECTS COORDINATOR AT BROWARD COUNTY TRAFFIC ENGINEERING, (954) 847-2600.

5. ALL WORK REQUIRED AT DESIGNATED SCHOOL CROSSINGS AND PEDESTRIAN CROSSINGS SHALL BE RESTORED TO A SAFE WALKABLE PATH DURING ARRIVAL AND DISMISSAL TIMES.

6. THIRTY (30) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE SPECIAL PROJECTS COORDINATOR AT BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-600, TO DISCUSS ALL NECESSARY SAFETY MEASURES.

7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE FOLLOWING BROWARD COUNTY SCHOOL BOARD PUPIL TRANSPORTATION DEPARTMENT PERSONNEL IF CONSTRUCTION WILL IMPACT ANY BUS ROUTES.

| NAME | SECTION | PHONE | EMAIL |
|---|---|---|---|
| RUTH MASTERS | ROUTING | (754) 321-4400 EXT. # 2309 | RUTH.MASTERS@BROWARDSCHOOLS.COM |
| VINCENT HARRELL | STUDENT TRANSPORTATION □ FLEET SERVICE | (754) 321-4472 | VINCENT.HARRELL@BROWARDSCHOOLS.COM |
| MARY TOCHTERMANN | STUDENT TRANSPORTATION □ FLEET SERVICE | (754) 321-4400 EXT. # 2006 | MARY.TOCHTERMANN@BROWARDSCHOOLS.COM |

8. UPON COORDINATION WITH THE AFOREMENTIONED PERSONNEL, AND IF DEEMED NECESSARY, A PRECONSTRUCTION MEETING WILL BE HELD TO DETERMINE ALL BUS ROUTES AND TO MAKE ANY NECESSARY ARRANGEMENTS FOR REROUTING. THE SPECIAL PROJECTS COORDINATOR FROM THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-2600, WILL BE NOTIFIED AND MAY ATTEND THE PRE-CONSTRUCTION MEETING.

# BROWARD COUNTY SCHOOL MAINTENANCE OF TRAFFIC NOTES:

1. THE MAINTENANCE OF TRAFFIC PLAN, PROVIDED BY THE CONTRACTOR, SHALL INCLUDE PROVISIONS FOR PEDESTRIAN AND/OR SCHOOL STUDENT TRAFFIC AS WELL AS VEHICULAR TRAFFIC. THE FOLLOWING ARE MINIMUM REQUIREMENTS:

2. THE SAFE WALK ROUTE FOR ALL SCHOOL STUDENTS WITHIN THE VICINITY OF THE CONSTRUCTION ZONE SHALL BE MAINTAINED DURING STUDENT ARRIVAL AND DISMISSAL TIMES. IF THE CURRENT WALKING SURFACE CANNOT BE MAINTAINED, THEN A TEMPORARY WALKABLE SURFACE SHALL BE CREATED. THE SAFE WALK ROUTE SHALL BE SEPARATED FROM THE CONSTRUCTION ACTIVITY DURING THE ENTIRE LENGTH OF THE PROJECT ENCOMPASSING THE ENTIRE WALK ROUTE WITH PROPER PEDESTRIAN OPENINGS AT DESIGNATED CROSSINGS IN COMPLIANCE WITH FDOT DESIGN STANDARDS INDEX NO. 600 AS WELL AS MEETING ALL ADA REQUIREMENTS.

3. ALL CONSTRUCTION EQUIPMENT ACTIVITY AROUND ANY DESIGNATED CROSSWALK SHALL CEASE TO OPERATE DURING THE STUDENT ARRIVAL AND DISMISSAL TIMES. ALL CONSTRUCTION EQUIPMENT ACTIVITY ADJACENT TO A DESIGNATED WALK ROUTE SHALL CEASE OPERATING UNLESS SATISFACTORILY BARRICADED FROM THE WALK ROUTE.

4. IN THE CASE THAT A DESIGNATED CROSSING OR ANY PORTION OF THE DESIGNATED WALK ROUTE CANNOT BE MAINTAINED, THE CONTRACTOR SHALL NOTIFY THE SPECIAL PROJECTS COORDINATOR AT BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-2600, A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO CLOSING THAT ROUTE IN ORDER TO ESTABLISH AN ALTERNATE CROSSING/ROUTE.

5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL ANY NECESSARY PAVEMENT, ROAD ROCK, PAVEMENT MARKINGS AND SIGNAGE AND/OR ANY PEDESTRIAN SIGNALIZATION AND/OR SIGNAL MODIFICATION TO ACCOMMODATE AN EXISTING OR ALTERNATE WALK ROUTE THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT.

6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE STATE CERTIFIED SCHOOL CROSSING GUARDS OR OFF DUTY POLICE OFFICERS TO CROSS STUDENTS AT ALL LOCATIONS OTHER THAN THOSE PREVIOUSLY DESIGNATED. THE CONTRACTOR MAY USE FLAGMEN, BUT ONLY IF THEY ARE STATE CERTIFIED AS A SCHOOL CROSSING GUARD.

7. THIRTY (30) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE SPECIAL PROJECTS COORDINATOR AT BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-2600 OR AT BROWARD@TRAFFIC.ORG TO DISCUSS ALL NECESSARY SAFETY MEASURES.

8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE FOLLOWING BROWARD COUNTY SCHOOL BOARD PUPIL TRANSPORTATION DEPARTMENT PERSONNEL IF CONSTRUCTION WILL IMPACT ANY BUS ROUTES:

| NAME | SECTION | PHONE | EMAIL |
|---|---|---|---|
| RUTH MASTERS | ROUTING | (754) 321-4400 EXT. # 2309 | RUTH.MASTERS@BROWARDSCHOOLS.COM |
| VINCENT HARRELL | STUDENT TRANSPORTATION □ FLEET SERVICE | (754) 321-4472 | VINCENT.HARRELL@BROWARDSCHOOLS.COM |
| MARY TOCHTERMANN | STUDENT TRANSPORTATION □ FLEET SERVICE | (754) 321-4400 EXT. # 2006 | MARY.TOCHTERMANN@BROWARDSCHOOLS.COM |

9. UPON COORDINATION WITH THE AFOREMENTIONED PERSONNEL, AND IF DEEMED NECESSARY, A PRE-CONSTRUCTION MEETING WILL BE HELD TO DETERMINE ALL BUS ROUTES AND TO MAKE ANY NECESSARY ARRANGEMENTS FOR REROUTING. THE SPECIAL PROJECTS COORDINATOR FROM THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-2600, WILL BE NOTIFIED AND MAY ATTEND THE PRE-CONSTRUCTION MEETING.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN APPROVED MAINTENANCE OF TRAFFIC PLAN (MOT), SPECIFYING THE ABOVE SCHOOL/PEDESTRIAN CONDITIONS, THROUGH THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION OR THE LOCAL MUNICIPALITY, DEPENDING ON THE ROADWAY JURISDICTION. THE CONDITIONS OUTLINED IN THE MOT ARE FULLY EFFECTIVE AS PART OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL WORK ASSOCIATED WITH THE PROJECT IS IN COMPLIANCE WITH ALL THE REQUIREMENTS OF THE APPROVED MOT.

11. THE CONTRACTOR SHALL ENSURE THAT THERE ARE NO SPEED LIMIT SIGNS INSTALLED WITHIN THE DESIGNATED REDUCED SPEED SCHOOL ZONE AT ANY TIME THROUGHOUT THE PROJECT.

# BROWARD COUNTY COMMUNICATION NOTES:

1. THE AGENCY RESPONSIBLE FOR MAINTENANCE OF THE TRAFFIC SIGNALS AND RELATED EQUIPMENT IS BROWARD COUNTY TRAFFIC ENGINEERING DIVISION (BCTED). ALL SYSTEM COMMUNICATIONS EQUIPMENT, CABLING AND RELATED MATERIAL SHALL COMPLY WITH BROWARD COUNTY'S LATEST EDITION OF THE MINIMUM STANDARDS AS EXPRESSED IN THE "STANDARDS AND SPECIFICATIONS - COMMUNICATION INFRASTRUCTURE" DOCUMENT. PLEASE REFER TO (BCTED'S) COMMUNICATIONS POLICIES AND PROCEDURES FOR ADDITIONAL INFORMATION. BROWARD COUNTY TRAFFIC ENGINEERING DIVISION WILL NOT ACCEPT ANY PROJECTS THAT DO NOT MEET THESE STANDARDS AND SPECIFICATIONS. IF FIBER OPTIC PULL BOXES ALREADY EXIST AT AN INTERSECTION, NO ADDITIONAL FIBER OPTIC PULL BOXES WILL NEED TO BE INSTALLED. FOR A COPY OF THESE STANDARDS REFER TO THE BROWARD COUNTY WEB SITE AT WWW.BROWARD.ORG/TRAFFIC UNDER PUBLICATIONS.

2. IF THERE ARE COPPER INTERCONNECT CABLE/S WITHIN YOUR PROJECT LIMITS OR WITHIN 1,500 FEET OF YOUR PROJECT LIMITS, CONTACT THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG OR 954-847-2745.

3. IF THERE ARE FIBER OPTIC CABLE/S WITHIN YOUR PROJECT LIMITS OR WITHIN 1,500 FEET OF YOUR PROJECT LIMITS, CONTACT THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG OR 954-847-2745.

4. IF THERE ARE CELLULAR COMMUNICATIONS WITHIN YOUR PROJECT LIMITS, CONTACT THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG OR 954-847-2745.

5. ALL BCTED COMMUNICATIONS CABLES/CONDUIT SHALL BE LOCATED A MINIMUM OF 48 HOURS IN ADVANCE.

BROWARD COUNTY TRAFFIC ENGINEERING DIVISION
PROCEDURE FOR NOTIFICATION OF COMMUNICATION DISRUPTION

COPPER INTERCONNECT CABLE NOTIFICATION CONTACT PERSON:

WHEN COMMUNICATIONS TO AN INTERSECTION MUST BE DISRUPTED BY A CONTRACTOR TO PERFORM WORK, THE CONTRACTOR SHALL PROVIDE TWO DAY ADVANCE NOTICE IN WRITING TO THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION. THIS NOTIFICATION SHALL BE CONVEYED VIA ELECTRONIC MAIL (EMAIL) TO THE TRAFFIC SIGNAL TECHNICIAN III AT TECOMMUNICATIONS@BROWARD.ORG. NOTIFICATION SHALL INCLUDE CONTACT PERSON, TELEPHONE NUMBER, PURPOSE, LOCATION AND DURATION. THE DISRUPTION SHALL LAST FOR NO MORE THAN 3 CONSECUTIVE BUSINESS DAYS. WHERE POSSIBLE, THE DISRUPTION SHALL BE DURING OFF PEAK HOURS BEGINNING AT 9:00 AM AND ENDING AT 3:00 PM.

FIBER OPTIC CABLE NOTIFICATION CONTACT PERSON:

WHEN COMMUNICATIONS TO AN INTERSECTION MUST BE DISRUPTED BY A CONTRACTOR TO PERFORM WORK, THE CONTRACTOR SHALL PROVIDE TWO DAY ADVANCE NOTICE IN WRITING TO THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION. THIS NOTIFICATION SHALL BE CONVEYED VIA ELECTRONIC MAIL (EMAIL) TO THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG. NOTIFICATION SHALL INCLUDE CONTACT PERSON, TELEPHONE NUMBER, PURPOSE, LOCATION AND DURATION. THE DISRUPTION SHALL LAST FOR NO MORE THAN 3 CONSECUTIVE BUSINESS DAYS. WHERE POSSIBLE, THE DISRUPTION SHALL BE DURING OFF PEAK HOURS BEGINNING AT 9:00 AM AND ENDING AT 3:00 PM.

UTILITY OWNER CONTACT PERSON:

INTERCONNECT COMMUNICATIONS CABLES - (ROBERT BLOUNT) BROWARD COUNTY TRAFFIC ENGINEERING DIVISION (BCTED) 954-847-2745

# SCHOOL ZONE INSTALLATION REQUIREMENTS WITHIN BROWARD COUNTY:

1. THE CONTRACTOR SHALL BE GOVERNED BY THE LATEST EDITIONS OF THE FOLLOWING MANUALS:

   A. THE FDOT DESIGN STANDARDS

   B. THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

   C. THE BROWARD COUNTY MINIMUM STANDARDS APPLICABLE TO PUBLIC RIGHTS-OF-WAY

2. FOR THE LATEST EDITION OF SCHOOL FLASHER DETAIL SHEETS AND MAINTENANCE OF TRAFFIC SCHOOL/PEDESTRIANS NOTES, SEE THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION'S WEB SITE AT:
   HTTP://WWW.BROWARD.ORG/TRAFFIC/PAGES/PUBLICATIONS.ASPX.

3. THE “MAINTENANCE OF TRAFFIC SCHOOL/PEDESTRIAN” NOTES SHALL APPEAR ON THE PLAN AS INDICATED. DEPENDING ON THE JURISDICTION OF THE ROADWAY THE CONTRACTOR WILL UTILIZE EITHER THE BCTED OR FDOT VERSION, WHICH WILL BE DETERMINED BY THE SCHOOL SAFETY PROGRAM SPECIAL PROJECTS COORDINATOR AT BCTED.

4. SCHOOL FLASHER PLANS ARE VALID FOR EIGHTEEN (18) MONTHS FROM DATE OF APPROVAL. AFTER THAT DATE, PLANS SHALL BE RESUBMITTED FOR APPROVAL.

5. NO SCHOOL FLASHER AND/OR ASSOCIATED EQUIPMENT SHALL BE PLACED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY OR ON PRIVATE PROPERTY WITHOUT THE PRIOR ACQUISITION OF THE NECESSARY TRAFFIC ENGINEERING EASEMENTS BY THE CONSULTANT/CONTRACTOR. THESE EASEMENTS SHALL BE LARGE ENOUGH TO ALLOW ACCESS TO THE TRAFFIC ENGINEERING EQUIPMENT BY TECHNICIANS AND BY LARGER VEHICLES WHICH MAY REQUIRE ACCESS TO THE EQUIPMENT. THE SIZE AND LOCATION OF THE EASEMENTS WILL BE DETERMINED ON A CASE-BY-CASE BASIS. THE EASEMENTS SHALL BE RECORDED DOCUMENTS AND A COPY OF THE FULLY EXECUTED RECORDED EASEMENT SHALL BE PROVIDED TO THE SCHOOL SAFETY PROGRAM SPECIAL PROJECTS COORDINATOR PRIOR TO INSTALLATION.

6. PRIOR TO ANY EQUIPMENT ORDER, THE CONTRACTOR SHALL SUBMIT TO THE SCHOOL SAFETY PROGRAM SPECIAL PROJECTS COORDINATOR AT BCTED FOR APPROVAL, ALL OF THE EQUIPMENT SPECIFICATIONS (I.E. SHOP DRAWINGS) FOR ALL MATERIALS PROPOSED FOR THE PROJECT. SEE SECTION 603 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION FOR SUBMITTAL DATA REQUIREMENTS. INCLUDED IN THE SUBMITTAL SHALL BE SHOP DRAWINGS FOR GROUND MOUNT AND/OR MAST ARM DETAILS, AS APPLICABLE.

7. IF ELECTRICAL SERVICE IS REQUIRED, THE CONTRACTOR SHALL MAKE WRITTEN REQUEST TO BCTED, SYSTEMS SECTION - DESIGN ENGINEER, TO PROVIDE BILLING AUTHORIZATION TO FPL. THIS IS REQUIRED BEFORE ELECTRICAL SERVICE CAN BE OBTAINED. THE REQUEST SHALL INCLUDE A STATEMENT CERTIFYING THAT THIS ELECTRICAL INSTALLATION MEETS OR EXCEEDS ALL APPLICABLE REQUIREMENTS OF ALL APPLICABLE CODES AND IS NOW READY FOR CONNECTION TO FPL FACILITIES. ALSO INCLUDE THE DATE SERVICE IS REQUIRED BY IN THE REQUEST.

8. THE CONTRACTOR SHALL MAKE WRITTEN REQUEST TO THE SCHOOL SAFETY PROGRAM SPECIAL PROJECTS COORDINATOR AT BCTED EITHER BY FAX□954-847-2700 OR E-MAIL□ TRAFFIC@BROWARD.ORG TO SCHEDULE AN INSPECTION OF THE COMPLETE INSTALLATION, INCLUDING THE INTERIM SIGNING AND PAVEMENT MARKING PLAN. ACTIVATION OF THE FLASHERS SHALL ONLY BE PERMITTED AFTER SAID INSPECTION.

9. THE CONTRACTOR SHALL PROVIDE SIX (6) SETS OF MARKED UP (AS-BUILT) CONSTRUCTION PLANS TO THE ENGINEER AND BCTED AS DEFINED IN FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 611, SEVEN (7) DAYS PRIOR TO SCHOOL FLASHER CONDITIONAL ACCEPTANCE INSPECTION BY BCTED. THE CONTRACTOR SHALL ALSO PROVIDE TWO SETS OF AS-BUILT PLANS TO BCTED SIGNAL TECHNICIAN AT THE TIME OF INSPECTION. TWO COPIES OF CABINET PRINTS, TWO SETS OF CABINET KEYS AND PAGER/TIME SWITCH OPERATION MANUALS FOR EACH LOCATION SHALL ALSO BE TURNED OVER AT THIS TIME.

10. THE CONTRACTOR IS ADVISED THAT THE PRESENCE OF OVERHEAD ELECTRICAL CONDUCTORS IN CLOSE PROXIMITY TO THE LOCATIONS OF PROPOSED SCHOOL FLASHERS MAY LIMIT THE TYPE OF EQUIPMENT THAT CAN BE USED IN CONSTRUCTION OF THE SCHOOL FLASHER. THE CONTRACTOR SHALL COORDINATE WITH FPL TO DEACTIVATE LINES IF NECESSARY.

11. ALL SIGN ASSEMBLIES SHOWN OR NOTED ON THE PLAN SHEETS FOR REMOVAL SHALL BE DELIVERED TO THE BCTED OPERATIONS BUILDING, 2300 WEST COMMERCIAL BLVD., FORT LAUDERDALE. EXISTING FLASHERS ARE NOT TO BE REMOVED UNTIL AFTER THE NEW UNIT HAS PASSED ITS FINAL INSPECTION.

12. SIGN LOCATIONS MAY BE VARIED IN THE FIELD AS NECESSARY IN ORDER TO AVOID CONFLICTS WITH UNFORESEEN OBSTACLES, DRIVEWAYS, ETC. ANY SIGN LOCATION VARIATIONS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND SHOWN ON THE AS BUILTS.

# DRAINAGE NOTES:

1. DRAINAGE PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) OR REINFORCED CONCRETE (RCP), THE USE OF RCP PIPE FOR PUBLIC ROADWAY CROSSINGS IS PREFERRED.

2. CATCH BASINS, INLETS AND JUNCTION BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS.

3. PRIOR TO BACKFILLING EXFILTRATION TRENCHES, DRAINAGE INLETS OR MANHOLES, THE CONTRACTOR SHALL NOTIFY THE ENGINEERING INSPECTOR FOR AN INSPECTION.

4. DRAINAGE STRUCTURES SHALL BE CLEANED PRIOR TO ACCEPTANCE BY CITY.

5. ALL PIPES SHALL BE LAID IN DRY TRENCH. ALL MUCK OR UNSUITABLE MATERIALS IN TRENCHES, INLETS OR MANHOLES SHALL BE REMOVED AND BACKFILLED WITH SELECTED MATERIAL APPROVED BY THE ENGINEER.

6. MINIMUM COVER FOR HDPE PIPE UNDER ASPHALT SHALL BE 24-INCH COMPACTED LIMEROCK BASE. MINIMUM COVER FOR PIPE UNDER GRASS SHALL BE 18" COMPACTED SUBGRADE.

7. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE PATTERNS AND PREVENT ADVERSE FLOODING OF THE TRAVEL LANES DURING CONSTRUCTION.

8. MAINTENANCE ACCESS SHALL BE PROVIDED ON BOTH SIDES OF EXFILTRATION TRENCHES IN THE FORM OF MANHOLES OR CATCH BASINS. THE MAXIMUM DISTANCE BETWEEN STORM STRUCTURES SHALL NOT EXCEED TREE HUNDRED (300) FEET).

9. ALL EXFILTRATION SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION DOCUMENT TITLED "DRAINAGE DESIGN GUIDE", LATEST EDITION.

10. GEOTEXTILE MATERIALS USED IN THE CONSTRUCTION OF EXFILTRATION TRENCHES SHALL BE IN ACCORDANCE WITH THE CRITERIA OF FLORIDA DEPARTMENT OF TRANSPORTATION'S DESIGN STANDARDS LATEST EDITION AND CITY OF FORT LAUDERDALE'S SPECIFICATIONS.

# DEMOLITION NOTES:

GENERAL DEMOLITION SPECIFICATIONS:

1. THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES SHOWN ON THE DRAWINGS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY.

2. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL VERIFY THE LOCATION, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND OTHER FEATURES AFFECTING THE WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT MIGHT IMPACT THE WORK.

3. CHAPTER 553.851 OF THE FLORIDA STATUTES REQUIRES THAT AN EXCAVATOR NOTIFY ALL UTILITIES A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO EXCAVATING.

4. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE EXCAVATION.

5. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, SUPERVISION, AND EQUIPMENT REQUIRED FOR THE ORDERLY DEMOLITION AND REMOVAL OF EXISTING STRUCTURES, PAVEMENT AND UTILITIES AS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN.

6. THE CONTRACTOR IS REQUIRED TO FAMILIARIZE HIMSELF WITH THE STRUCTURES TO BE DEMOLISHED.

7. THE FOLLOWING LIST OF STRUCTURES REQUIRING DEMOLITION IS INCLUDED FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE DRAWINGS INDICATE THE SCOPE OF DEMOLITION WHERE DEMOLITION IS REQUIRED.

   7.1. DEMOLITION AND REMOVAL OF A 5' MIN.± STRIP OF EXISTING ON-SITE ASPHALT, CONCRETE AND CURBING AROUND THE PERIMETER OF THE EXISTING STRUCTURES AND UTILITIES BEING DEMOLISHED.

   7.2. REMOVAL OF EXISTING ON-SITE ABOVEGROUND AND UNDERGROUND UTILITIES, INCLUDING REMOVAL OR PLUGGING OF EXISTING UTILITIES AS SHOWN ON PLANS.

8. PRIOR TO REMOVAL OF ANY UNDERGROUND TANK AND OTHER COMPONENT, CONTRACTOR MUST COMPLETELY DRAIN THE SYSTEMS TO AN APPROVED SANITATION TANK FOR DISPOSAL TO AN APPROVED LOCATION, AS REQUIRED BY DISPOSAL PERMIT.

9. PROTECT ALL UTILITIES, UNLESS OTHERWISE NOTED.

10. ALL THE CONCRETE AND PAVEMENT TO BE REMOVED MUST BE SAW CUT CLEAN PRIOR TO REMOVAL.

11. WET DOWN MASONRY WALLS AND DEBRIS DURING DEMOLITION AND LOADING OPERATIONS TO PREVENT THE SPREAD OF DUST (AS APPLICABLE TO PROJECT).

12. ALL EXISTING STRUCTURES, PAVEMENTS, SLABS, FOUNDATIONS, STEPS AND OTHER ON-SITE EXISTING FEATURES INDICATED ON THE DRAWINGS TO BE REMOVED SHALL BE DEMOLISHED AND REMOVED BY THE CONTRACTOR (AS APPLICABLE TO PROJECT).

13. ALL EXISTING SEWERS, PIPING AND UTILITIES SHOWN ON THE DRAWINGS ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH THE WORK.

14. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO REMOVAL OR RELOCATION OF ANY ELECTRICAL, TELEPHONE, CABLE AND/OR GAS LINES. SUFFICIENT TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE.

15. CONTRACTOR MUST STOP OPERATION AND NOTIFY THE OWNER/ENGINEER FOR PROPER DIRECTION IF ANY ENVIRONMENTAL OR HEALTH RELATED CONTAMINANT IS ENCOUNTERED DURING THE DEMOLITION/EXCAVATION PROCESS.

16. FILL FOR LOWER LEVELS OF DEMOLISHED STRUCTURES MAY INCLUDE CONCRETE OR MASONRY RUBBLE RESULTING FROM DEMOLITION, SUBJECT TO THE ENGINEER'S/ARCHITECT'S APPROVAL. RUBBLE SHALL PASS THROUGH A THREE-INCH RING.

17. REMOVE AND LEGALLY DISPOSE OF ALL OTHER RUBBISH, RUBBLE, AND DEBRIS. COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING DISPOSAL OF WASTES AND DEBRIS.

18. MAINTAIN ACCESS TO SURROUNDING PROPERTIES AND BUILDINGS.

19. PRIOR TO DEMOLITION OCCURRING ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.

20. ALL TRAFFIC SIGNS OUTSIDE THE DEMOLITION AREA ARE TO REMAIN UNLESS OTHERWISE SPECIFIED.

21. ANY MUCK ENCOUNTERED UNDER PROPOSED STRUCTURES SHALL BE REMOVED TO FIVE-FEET BEYOND THE FOOTPRINT OF THAT STRUCTURE. BACKFILL WITH APPROVED FILL MATERIAL SATISFYING ALL COMPACTION REQUIREMENTS.

22. ALL EXISTING UTILITIES WITHIN THE DEMOLITION SITE AREA SHALL BE ADJUSTED, REMOVED OR RELOCATED AT THE CONTRACTOR'S EXPENSE. WORK SHALL BE COORDINATED BY THE CONTRACTOR DIRECTLY WITH THE APPROPRIATE UTILITY COMPANY. ALL EXPENSES SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

23. ALL TRASH, DEBRIS AND OTHER MATERIAL REMOVED FROM THE SITE SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

PRE-DEMOLITION RESPONSIBILITIES :

1. UPON RECEIPT OF NOTICE OF AWARD, THE CONTRACTOR SHALL ARRANGE A PRE-DEMOLITION CONFERENCE TO INCLUDE ALL INVOLVED GOVERNMENTAL AGENCIES, ALL AFFECTED UTILITY OWNERS, THE OWNER, THE ENGINEER AND THE CONTRACTOR.

2. PRIOR TO DEMOLITION, THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A DEMOLITION SCHEDULE DEPICTING EACH PHASE OF THE WORK.

3. PRIOR TO DEMOLITION, CONTRACTOR TO PROVIDE FOR THE OWNER A LISTING OF THE FACILITIES THE CONTRACTOR SHALL UTILIZE FOR RECYCLING AND DISPOSAL OF SPECIFIC MATERIALS. CONTRACTOR TO INDICATE THE MATERIALS INTENDED FOR RECYCLING AND THE MATERIALS INTENDED FOR DISPOSAL FOR OWNER'S APPROVAL.

4. PRIOR TO DEMOLITION, CONTRACTOR TO PROVIDE THE OWNER SKETCHES SHOWING PROPOSED HAULING ROUTES TO RECYCLING AND DISPOSAL FACILITIES FOR APPROVAL.

5. PRIOR TO DEMOLITION, THE CONTRACTOR SHALL VERIFY THE SIZE, LOCATION, ELEVATION, AND MATERIAL OF ALL EXISTING UTILITIES WITHIN THE AREA OF DEMOLITION.

6. EXISTING UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. THE CITY AND THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UTILITIES SHOWN OR FOR ANY EXISTING UTILITIES NOT SHOWN.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ANY EXISTING UTILITIES FOR WHICH IT FAILS TO REQUEST LOCATIONS FROM THE UTILITY OWNER. THE CONTRACTOR IS RESPONSIBLE AS WELL FOR DAMAGE TO ANY EXISTING UTILITIES WHICH ARE PROPERLY LOCATED.

8. THE LOCATIONS OF EXISTING UTILITIES AND STORM DRAINAGE SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. ENGINEER ASSUMES NO RESPONSIBILITY FOR INACCURACY.

9. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL FIELD LOCATE EXISTING UNDERGROUND UTILITIES WITH THE UTILITY OWNERS.

10. THE CONTRACTOR IS RESPONSIBLE FOR RELOCATION'S OF THE VARIOUS EXISTING UTILITIES WITH THE UTILITY OWNERS, WHICH SHALL BE DONE IN A TIMELY MANNER TO MINIMIZE IMPACT ON DEMOLITION SCHEDULE. ANY DELAY CAUSED BY THE CONTRACTOR BY THE RELOCATION OF UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.

11. SUNSHINE STATE ONE CALL OF FLORIDA, INC. REQUIRES THE CONTRACTOR TO CALL TWO (2) FULL BUSINESS DAYS (BUT NOT MORE THAN FIVE) PRIOR TO BREAKING GROUND TO FIND OUT WHERE BURIED FACILITIES (ELECTRICAL, GAS, TELEPHONE, CABLE, WATER) ARE LOCATED.

DEMOLITION SAFETY:

1. ALL DEMOLITION SHALL BE DONE IN A SAFE MANNER, SPECIFICALLY, THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL BE STRICTLY OBSERVED.

2. PROVIDE ADEQUATE PROTECTION FOR PERSONS AND PROPERTY AT ALL TIMES. EXECUTE THE WORK IN A MANNER TO AVOID HAZARDS TO PERSONS AND PROPERTY AND PREVENT INTERFERENCE WITH THE USE OF AND ACCESS TO ADJACENT BUILDINGS. STREETS AND SIDEWALKS SHALL NOT BE UNNECESSARILY BLOCKED BY DEBRIS AND EQUIPMENT.

3. BUILDING MATERIALS TO BE REMOVED SHALL BE TESTED FOR ASBESTOS AND LEAD PAINT.

4. IF PETROLEUM PRODUCTS ARE FOUND WHILE DEMOLISHING, DISPOSE OF PETROLEUM WASTE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

PAVEMENT DEMOLITION:

1. WHERE EXISTING PAVEMENT IS TO BE REMOVED, SAW-CUT THE SURFACING LEAVING A UNIFORM AND STRAIGHT EDGE WITH MINIMUM DISTURBANCE TO THE REMAINING ADJACENT SURFACING. IF DEMOLITION RESULTS IN RAVELING OF SAW CUT SURFACE, RECUT BACK FROM THE RAVELED EDGE PRIOR TO RESTORATION.

2. WHERE EXISTING PAVEMENT, CURB, CURB AND GUTTER, SIDEWALK, DRIVEWAY, OR VALLEY GUTTER IS REMOVED FOR INLETS, MANHOLES, APPURTENANCES, FACILITIES OR STRUCTURES, SAID PAVEMENT, ETC., SHALL BE REPLACED WITH NEW PAVEMENT, ETC. CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, TOOLS, SUPPLIES, AND OTHER EQUIPMENT AS REQUIRED.

3. CONTRACTOR MAY LIMIT SAW-CUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THE DRAWINGS. HOWEVER, IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, SIDEWALK, BUILDINGS, UTILITIES, ETC., THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR IT'S REMOVAL AND REPLACEMENT. REPLACEMENT PAVEMENT, SIDEWALK, ETC., SHALL BE NEW.

DEMOLITION PERMITTING:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY REQUIRED PERMITS FOR DEMOLITION FROM RESPONSIBLE REGULATORY AGENCIES WHILE FULLY ACKNOWLEDGING AND COMPLYING WITH ALL REQUIREMENTS PRIOR TO COMMENCING DEMOLITION WORK.

2. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE EXTENT OF DEMOLITION, RECYCLING OR REUSE REQUIRED TO PERFORM THE CONTRACT WORK FOR THIS PROJECT. THE CONTRACTOR SHALL CONDUCT SITE VISITS AND SHALL EXAMINE ALL THE INFORMATION WITHIN THESE DOCUMENTS. ALL DISCREPANCIES AND/OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BID SUBMITTAL.

3. THE CONTRACTOR SHALL COORDINATE WITH OWNER PRIOR TO COMMENCEMENT OF ANY WORK. ACTUAL REMOVAL AND/OR RELOCATION OF ALL EXISTING LANDSCAPING WITHIN DEMOLITION AREAS TO BE CONDUCTED BY A LANDSCAPE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE SITEWORK DEMOLITION CONTRACTOR TO COORDINATE DEMOLITION ACTIVITIES WITH THE LANDSCAPE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND PRESERVING TREES AS INDICATED ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TREE REMOVAL PERMIT OR ANY OTHER APPLICABLE PERMIT TO REMOVE, RELOCATE, OR PRESERVE EXISTING LANDSCAPE AND TREES.

4. ANY TREES FOR REMOVAL FOUND TO BE GREATER THAN OR EQUAL TO THREE (3) INCHES IN DIAMETER AT BREAST HEIGHT (DBH) SHALL REQUIRE A PERMIT WITH THE BROWARD COUNTY ENVIRONMENTAL PROTECTION AND GROWTH MANAGEMENT DEPARTMENT (BCEPGMD).

5. SHOULD REMOVAL AND/OR RELOCATION ACTIVITIES DAMAGE THE LIGHTING, STORM INLET STRUCTURES, OR OTHER STRUCTURES DESIGNATED TO BE SAVED, THEN THE CONTRACTOR SHALL PROVIDE NEW MATERIALS/STRUCTURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

DEMOLITION EROSION AND SEDIMENT CONTROL NOTES :

1. THE SCHEDULING, SEQUENCING AND CONTROL MEASURES, WHICH ARE OUTLINED HEREIN, ARE SUBJECT TO THE FINAL DEFINITION BY THE CONTRACTOR WHO SHALL BE SELECTED TO PERFORM THE WORK AND SHALL BE RESPONSIBLE FOR IMPLEMENTATION AND COMPLIANCE.

2. PRIOR TO DEMOLITION, THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A DEMOLITION SCHEDULE DEPICTING EACH PHASE OF THE WORK. THE CONTRACTOR SHALL ALSO BE REQUIRED TO SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN ENCOMPASSING THE PRINCIPALS AND THE REQUIREMENTS DESCRIBED HEREIN AND A SCHEDULE FOR THEIR IMPLEMENTATION AND MAINTENANCE FOR THE PROJECT DURATION.

3. DURING DEMOLITION, THE CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO ENSURE AGAINST POLLUTING, SILTATION OR DISTURBANCE TO SUCH AN EXTENT AS TO CAUSE AN INCREASE IN TURBIDITY TO THE EXISTING DRAINAGE SYSTEMS AND ADJACENT WATER BODIES AND WETLANDS, IN COMPLIANCE WITH ALL PERMIT REQUIREMENTS RELATED TO SUCH MEASURES.

4. METHODS MAY INCLUDE TEMPORARY EROSION AND SEDIMENT CONTROLS SUCH AS SEDIMENT BASINS, SEDIMENT CHECKS, SILT BARRIERS, SILT SCREENS, TURBIDITY BARRIERS OR THE BEST MANAGEMENT PRACTICES AVAILABLE TO THE INDUSTRY.

5. EROSION AND SEDIMENT CONTROL INSTALLATIONS SHALL BE MAINTAINED THROUGHOUT THE DEMOLITION PERIOD AND UNTIL NEW VEGETATIVE GROWTH HAS BEEN ESTABLISHED.

6. THROUGHOUT THE DEMOLITION PERIOD, THE CONTRACTOR SHALL INSPECT DAILY THE EROSION AND SEDIMENT CONTROL INSTALLATIONS FOR FAILURE OR SIGNS OF FAILURE OR MALFUNCTION. REPAIR OR REPLACE THE EROSION AND SEDIMENT CONTROL INSTALLATIONS IMMEDIATELY UPON DISCOVERY OF FAILURE OR MALFUNCTION.

7. INLETS AND CATCH BASINS, EXISTING ON-SITE AND OFF-SITE, SHALL BE PROTECTED FROM SEDIMENT STORM RUNOFF.

8. THE CONTRACTOR SHALL PROMPTLY REMOVE ALL MUD, DIRT OR OTHER MATERIALS TRACKED OR SPILLED ONTO EXISTING PUBLIC ROADS AND FACILITIES DUE TO DEMOLITION.

9. DEWATERING ACTIVITIES SHALL NOT RESULT IN ANY DISCHARGE OF TURBID WATER FROM THE PROJECT SITE WITHOUT PROPER EROSION AND SEDIMENT CONTROL AND APPROVAL FROM ENGINEER.

10. PHASING OF EROSION CONTROL DEMOLITION SHALL BE RECOMMENDED AS FOLLOWS:

    10.1. PLACEMENT OF PERIMETER PROTECTIVE MEASURES (SILT FENCE, HAY BALES, TURBIDITY BARRIERS, ETC.) AROUND ON-SITE FEATURES TO BE RETAINED, AT POINTS OF OFF-SITE DISCHARGE AND AROUND WORK AREAS TO BE EXCAVATED OR FILLED.

    10.2. REROUTE RUNOFF FROM AREAS OUTSIDE OF THE DEMOLITION AREA TO MINIMIZE FLOW THROUGH AREAS TO BE DISTURBED BY DEMOLITION. BERMS, SWALES AND OTHER MEANS USED FOR SUCH CONVEYANCE SHALL BE VEGETATED AND MEASURES TAKEN TO PROVIDE PROTECTION UNTIL STABILIZATION OCCURS (AS APPLICABLE TO THE PROJECT).

10.3. SELECT LOCATIONS FOR PLACEMENT OF EXCAVATED MATERIAL, WHERE SUITABLE FOR FILL OR UNSUITABLE MATERIAL, AND CONSTRUCT CONTAINMENT BERMS AROUND THE AREA. THE USE OF STRIPING FOR THIS PURPOSE MAY ACCELERATE BERM REVEGETATION. CONSTRUCT TEMPORARY OUTLETS FOR CONTAINMENT AREAS WITH SCREENS, HAY BALES, SETTLING BASINS OR OTHER MEASURES TO PREVENT SILT TRANSPORT.

10.4. SELECT / DESIGNATE ACCESS ROUTING FOR DEMOLITION EQUIPMENT AND VEHICLES AND PROVIDE PERIMETER PROTECTIVE MEASURES WHERE EXISTING TERRAIN SHALL BE SUBJECT TO DISRUPTION BY SUCH TRAFFIC.

10.5. CONSTRUCT ABOVE GROUND OR OTHER CONTAINMENT AREAS FOR DEMOLITION AREA RUNOFF. PROVIDE SCREENS, HAY BALES, ETC. TO FILTER DISCHARGE FROM THOSE AREAS.

10.6. SPOIL MOUNDS SHALL NOT BE LEFT FOR MORE THAN ONE WEEK PRIOR TO REPLACEMENT UNLESS PROTECTIVE CONTAINMENT MEASURES IN THE WORK AREA ARE APPLIED.

10.7. GRASSING, SODDING, ETC. SHALL BE IN PLACE IMMEDIATELY UPON COMPLETION OF REGRADING, SWALE SLOPES AND THE CONSTRUCTED OR DISTURBED AREAS.

11. THE CONTRACTOR IS REQUIRED TO ADHERE TO THE REQUIREMENT OF THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES). THE CONTRACTOR SHALL INSTITUTE BEST MANAGEMENT PRACTICES (BMPS) TO ENSURE COMPLIANCE WITH THE NPDES PROGRAM AND TO MINIMIZE THE IMPACT TO PUBLIC STORMWATER FACILITIES. A NOTICE OF INTENT (NOI) SHALL BE FILED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.

12. THE CONTRACTOR SHALL PREPARE A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND MAINTAIN ALL RECORDS REQUIRED BY ITS NPDES STORMWATER PERMIT FOR ITS CONSTRUCTION ACTIVITIES.

13. PRIOR TO CONSTRUCTION, A SILT FENCE IN ACCORDANCE WITH CITY'S DETAIL SHALL BE ERECTED AS NOTED ON PLANS. ALL PROPOSED CATCH BASINS SHALL HAVE THEIR INLETS PROTECTED BY THE INSTALLATION OF FILTER INLET INSERTS INTO THE FRAME AND GRATE. SILT FENCES AND FILTER INLET INSERTS SHALL REMAIN IN PLACE DURING THE ENTIRE DURATION OF CONSTRUCTION.

14. CONTRACTOR SHALL BRACE ALL EXISTING LANDSCAPING TO REMAIN PRIOR TO BEGINNING ANY WORK AND SHALL ENSURE ITS STABILIZATION THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. EXISTING SOD DISTURBED BY CONSTRUCTION THAT IS NOT AFFECTED BY PROPOSED GRADING SHALL BE RESTORED TO NEW CONDITION UPON COMPLETION OF CONSTRUCTION. SODDED SLOPES STEEPER THAN FOUR HORIZONTAL TO ONE VERTICAL SHALL BE PEGGED.

15. ALL WASTE GENERATED FROM THE CONSTRUCTION SHALL BE DISCARDED IN ACCORDANCE WITH ALL APPLICABLE STATE, LOCAL AND FEDERAL REGULATIONS. CONTRACTOR SHALL OBTAIN ALL APPLICABLE CODES AND BECOME FAMILIAR WITH STATE, LOCAL AND FEDERAL REGULATIONS PRIOR TO BEGINNING CONSTRUCTION.

16. TO ENSURE THAT OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST IS MINIMIZED, CONTRACTOR SHALL PUT INTO PRACTICE THE METHODS DETAILED IN FLORIDA DEPARTMENT OF TRANSPORTATION INDEX 106 (2010 DESIGN STANDARDS) AND BMPS.

17. DUST GENERATED FROM CONSTRUCTION SHALL BE MINIMIZED BY DAILY WATERING OF THE SITE.

18. AT ANY TIME DURING CONSTRUCTION THAT THE SILT FENCING IS DISTURBED, THE SILT FENCING SHALL BE RESTORED TO ITS ORIGINAL STATE WITHIN 24 HOURS. AT NO TIME DURING CONSTRUCTION SHALL WORK BE PERFORMED WITHOUT THE INTEGRITY OF THE SILT FENCING SECURED.

19. A QUALIFIED INSPECTOR, PROVIDED BY THE CONTRACTOR, SHALL INSPECT ALL POINTS OF DISCHARGE INTO NEARBY SURFACE WATER. THE INSPECTION SHALL OCCUR AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES OR GREATER. INSPECTION INCLUDES THE WRITTEN RECORDING OF THE CONDITION OF ALL DISCHARGE POINTS, INTEGRITY OF SILT FENCING, DAILY DUST CONTROL MEASURES, VEHICULAR TRAFFIC AND CONSTRUCTION MATERIAL STORAGE AND DISPOSAL. WRITTEN RECORD OF ALL INSPECTIONS SHALL BE STORED BY THE CONTRACTOR.

20. THE INSPECTION REPORT SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING INFORMATION: NAME AND QUALIFICATION OF PERSONNEL MAKING THE INSPECTION, DATE OF INSPECTION, RAINFALL DATE, MAJOR OBSERVATIONS RELATING TO THE SWPPP, ACTIONS TAKEN BY CONTRACTOR AND ANY INCIDENT OF NONCOMPLIANCE WITH PERMIT. WHERE AN INSPECTION DOES NOT IDENTIFY ANY INCIDENT OF NONCOMPLIANCE, THE REPORT SHALL CONTAIN A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE SWPPP AND THE PERMIT.

21. THE CONTRACTOR SHALL RETAIN A COPY OF THE SWPPP AND ALL REPORTS, RECORDS AND DOCUMENTATION REQUIRED BY THE PERMIT AT THE CONSTRUCTION SITE, OR AN APPROPRIATE ALTERNATIVE LOCATION AS SPECIFIED IN THE NOTICE OF INTENT, FROM THE DATE OF PROJECT INITIATION TO THE DATE OF FINAL STABILIZATION.

22. THE CONTRACTOR SHALL RETAIN THE SWPPP, NOI AND ALL RECORDS ASSOCIATED THEREWITH FOR A PERIOD OF AT LEAST THREE (3) YEARS FROM THE DATE THAT THE SITE IS FINALLY STABILIZED.

23. SEE LANDSCAPE PLANS FOR TREE REMOVAL AND LANDSCAPE DEMOLITION.

24. CONTRACTOR SHALL COORDINATE THROUGH CITY'S CONSTRUCTION DIVISION AND CITY'S PARKS DEPARTMENT ON HOW TO STOCK AND RE-USE EXCAVATED SOIL FROM SITE (AS APPLICABLE TO THE PROJECT).

INTERRUPTION OF EXISTING UTILITIES :

1. ANY DEMOLITION WORK THAT REQUIRES INTERRUPTION OF SERVICE TO ANY CUSTOMER SHALL BE DONE SO WITH A MINIMUM OF SEVENTY-TWO (72) HOUR WRITTEN NOTICE TO, AND WRITTEN APPROVAL BY, THE APPROPRIATE UTILITY COMPANY.

2. THE CONTRACTOR SHALL ARRANGE A MEETING WITH THE LOCAL JURISDICTIONAL AGENCIES AND OTHER GOVERNING AGENCIES, AND OTHER AFFECTED UTILITIES PRIOR TO SCHEDULING THE SHUT DOWN TO ASSESS THE SCOPE OF WORK.

3. ALL SYSTEM SHUT DOWNS SHALL BE SCHEDULED BY THE CONTRACTOR AT SUCH TIME THAT SYSTEM DEMAND IS LOW. THIS GENERALLY REQUIRES NIGHT TIME WORK BY THE CONTRACTOR AND REQUIRES FULL-TIME INSPECTION BY A REPRESENTATIVE OF THE UTILITY. ALL COST FOR OVERTIME WORK BY THE REPRESENTATIVE OF THE UTILITY SHALL BE BORNE BY THE CONTRACTOR.

4. EACH CUSTOMER AFFECTED BY THE SHUT-DOWN SHALL BE PROVIDED, MINIMUM, FORTY-EIGHT (48) HOURS WRITTEN NOTIFICATION BY THE CONTRACTOR.

TEMPORARY DEMOLITION FACILITIES :

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE OR SUPPLY TEMPORARY WATER SERVICE, SANITARY FACILITIES AND ELECTRICITY TO ITS EMPLOYEES AND SUBCONTRACTORS FOR THEIR USE DURING DEMOLITION.

2. MAINTENANCE OF TRAFFIC (MOT) IN THE PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS.

3. ALL OPEN TRENCHES AND HOLES ADJACENT TO ROADWAYS OR WALKWAYS SHALL BE PROPERLY MARKED AND BARRICADED TO ASSURE THE SAFETY OF BOTH VEHICULAR AND PEDESTRIAN TRAFFIC.

4. NO TRENCHES OR HOLES NEAR WALKWAYS OR IN ROADWAYS OR THEIR SHOULDERS ARE TO BE LEFT OPEN DURING NIGHTTIME HOURS WITHOUT EXPRESS WRITTEN PERMISSION OF THE CITY OR RESPECTIVE GOVERNING AGENCY.

WASTE MANAGEMENT PLAN:

1. IMPLEMENT A WASTE MANAGEMENT PLAN FOR APPROVAL BY THE OWNER. PROVIDE HANDLING, CONTAINERS, STORAGE, SIGNAGE, TRANSPORTATION AND OTHER ITEMS AS NEEDED TO IMPLEMENT THE WASTE MANAGEMENT PLAN DURING THE ENTIRE DURATION OF THE CONTRACT.

2. DESIGNATE A WASTE MANAGEMENT COORDINATOR TO BE RESPONSIBLE FOR IMPLEMENTING, MONITORING AND REPORTING STATUS OF WASTE MANAGEMENT WORK PLAN. COORDINATOR SHALL BE PRESENT AT PROJECT SITE FULL-TIME FOR DURATION OF PROJECT.

3. TRAIN WORKERS, SUBCONTRACTORS AND SUPPLIERS ON PROPER WASTE MANAGEMENT PROCEDURES, AS APPROPRIATE FOR THE WORK AT THE PROJECT SITE.

4. DISTRIBUTE A WASTE MANAGEMENT PLAN BEFORE WORK BEGINS. REVIEW PLAN PROCEDURES AND LOCATION ESTABLISHED FOR SALVAGE, RECYCLING AND DISPOSAL.

RECYCLING DEMOLITION WASTE:

1. SEPARATE RECYCLABLE WASTE FROM OTHER WASTE MATERIALS, TRASH AND DEBRIS. SEPARATE RECYCLABLE WASTE BY TYPE AT THE PROJECT SITE TO THE MAXIMUM EXTENT PRACTICAL.

2. PROVIDE APPROPRIATELY MARKED CONTAINERS OR BINS FOR CONTROLLING RECYCLABLE WASTE UNTIL THEY ARE REMOVED FROM THE PROJECT SITE. INCLUDE A LIST OF ACCEPTABLE AND UNACCEPTABLE MATERIALS AT EACH CONTAINER AND BIN.

3. INSPECT CONTAINERS AND BINS FOR CONTAMINATION AND REMOVE CONTAMINATED MATERIALS IF FOUND.

4. STOCKPILE PROCESSED MATERIALS ON-SITE WITHOUT INTERMIXING WITH OTHER MATERIALS. PLACE, GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER TO PREVENT WINDBLOWN DUST.

5. STOCKPILE MATERIALS AWAY FROM DEMOLITION AREA. DO NOT STORE WITHIN DRIP LINE OF REMAINING TREES.

6. STORE COMPONENTS OFF THE GROUND AND PROTECT FROM THE WEATHER.

7. REMOVE RECYCLABLE WASTE OFF THE OWNER'S PROPERTY AND TRANSPORT TO RECYCLING RECEIVER OR PROCESSOR.

8. ASPHALTIC CONCRETE PAVING: BREAK UP AND TRANSPORT PAVING TO ASPHALT RECYCLING FACILITY.

9. CONCRETE: REMOVE REINFORCEMENT AND OTHER METALS FROM CONCRETE AND SORT WITH OTHER METALS.

10. MASONRY: MASONRY WASTE SHALL INCLUDE WHOLE OR BROKEN BRICK AND CONCRETE MASONRY UNITS. WHOLE MASONRY UNITS SHALL BE CLEANED AND REUSED OR DONATED. BROKEN MASONRY SHALL BE CRUSHED AND USED AS FILL FOR OFFSITE AREAS. REMOVE METAL REINFORCEMENT, ANCHORS AND TIES FROM MASONRY AND SORT WITH OTHER METALS.

11. METALS: METALS FROM REINFORCED CONCRETE, REINFORCED MASONRY, STRUCTURAL STEEL MEMBERS, FLASHING AND SHEET METAL, CONDUIT PIPE, SIDING, PIPING AND WIRING SHALL BE SEPARATED BY TYPE.

12. STRUCTURAL STEEL: STACK MEMBERS ACCORDING TO THEIR SIZE, TYPE AND LENGTH.

13. NUTS AND BOLTS: REMOVE BOLTS, NUTS, WASHERS AND OTHER ROUGH HARDWARE.

14. SITE-CLEARING WASTE SHALL BE RECYCLED BY CHIPPING BRUSH, BRANCHES AND TREES, THEN HAUL TO WOOD RECYCLING CENTER.

DISPOSAL OF WASTE:

1. GENERAL: EXCEPT FOR ITEMS OR MATERIALS TO BE SALVAGED, RECYCLED OR OTHERWISE REUSED, REMOVE WASTE MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN A LANDFILL OR OTHER PERMITTED DISPOSAL FACILITY.

2. EXCEPT AS OTHERWISE SPECIFIED, DO NOT ALLOW WASTE MATERIALS THAT ARE TO BE DISPOSED OF TO ACCUMULATE ON-SITE.

3. REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT SHALL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.

4. BURNING: DO NOT BURN WASTE MATERIALS.

5. DISPOSAL: TRANSPORT WASTE MATERIALS OFF THE OWNER'S PROPERTY AND LEGALLY DISPOSE OF THEM.

| MINIMUM DENSITY REQUIREMENTS | | | |
|---|---|---|---|
| LOCATION | MATERIAL | MINIMUM DENSITY (% OF MAX) | TESTING FREQUENCY |
| ROADS (INCLUDES SIDEWALKS, ASPHALT PATHS) | BACKFILL | 98% | VERTICAL DISTRIBUTION: ONE TEST AT EVERY LIFT STARTING AT TOP OF FIRST LIFT AND PROCEEDING UPWARD TO GRADE.<br><br>HORIZONTAL DISTRIBUTION: TESTS SHALL BE PERFORMED AT RANDOMLY SELECTED LOCATIONS WITHIN EACH 300 FOOT INTERVAL (MAXIMUM) ALONG THE LENGTH OF ROADWAY, SIDEWALK OR PATHWAY. |
| | SUBGRADE | 98% | |
| | BASE | 98% | |
| MANHOLES AND VAULTS (IN ROADS AND PARKING AREAS) | IN-PLACE SUBGRADE BENEATH STRUCTURES | 95% | VERTICAL DISTRIBUTION: ONE TEST AT EVERY LIFT STARTING AT THE BOTTOM OF THE STRUCTURE AND PROCEEDING UPWARD TO GRADE.<br><br>HORIZONTAL DISTRIBUTION: PERFORM TESTING AT EACH STRUCTURE. |
| | BACKFILL BENEATH STRUCTURES | 98% | |
| | BACKFILL AROUND STRUCTURES | 98% | |
| | CRUSHED STONE BENEATH STRUCTURES | NOTE 6 | |
| PARKING AREAS | BACKFILL | 98% | VERTICAL DISTRIBUTION: ONE TEST AT EVERY LIFT STARTING AT TOP OF FIRST LIFT AND PROCEEDING UPWARD TO GRADE.<br><br>HORIZONTAL DISTRIBUTION: TESTS SHALL BE PERFORMED EVERY 6,000 SQUARE FEET OF PARKING AREA. |
| | SUBGRADE | 98% | |
| | BASE | 98% | |
| UTILITY TRENCH BACKFILL | BEDDING AND BACKFILL | 98% | VERTICAL DISTRIBUTION: ONE TEST AT EVERY LIFT STARTING AT THE SPRING LINE AND PROCEEDING UPWARD TO GRADE.<br><br>HORIZONTAL DISTRIBUTION: TESTS SHALL BE PERFORMED AT RANDOMLY SELECTED LOCATIONS WITHIN EACH 300 FOOT INTERVAL (MAXIMUM) ALONG THE LENGTH OF A PIPE INSTALLATION, AND BETWEEN EACH SET OF STRUCTURES SEPARATED BY LESS THAN 300 FEET. |
| ROADS AND PARKING | ASPHALT | 94% | ASPHALT TESTING MAY BE DONE BY CORE SAMPLING OR NUCLEAR GAUGE DENSITY TESTING. ASPHALT TESTING SHALL BE AT MAXIMUM 300 LINEAR FOOT ALONG ROADWAYS AND 6,000 SQUARE FOOT INTERVALS FOR PARKING AREAS. |

NOTES:

1. THE DENSITY REQUIREMENTS PRESENTED ASSUME DRY TRENCH CONDITIONS.
2. UNLESS INDICATED OTHERWISE IN THE SPECIFICATIONS, TESTING SHALL COMPLY WITH THE REQUIREMENTS PRESENTED IN THIS TABLE.
3. LIFT THICKNESSES FOR BASE, SUBGRADE AND BACKFILL SHALL BE AS INDICATED ON THE DETAILS OR DESCRIBED IN THE SPECIFICATIONS.
4. MAXIMUM DENSITY SHALL BE DETERMINED BY ASTM D 1557 OR AASHTO T180 (MODIFIED PROCTOR).
5. FIELD DENSITY TESTS SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D 1556 OR D 2922.
6. THE AGGREGATE SHALL BE COMPACTED TO A DEGREE ACCEPTABLE TO THE ENGINEER BY USE OF A VIBRATORY COMPACTOR AND/OR CRAWLER TRACTOR.

# WATER MAIN SEPARATION IN ACCORDANCE WITH F.A.C. RULE 62-555.314

| OTHER PIPE | HORIZONTAL SEPARATION | CROSSINGS (NOTE 1) | JOINT SPACING AT CROSSINGS (FULL JOINT CENTERED) |
|---|---|---|---|
| STORM SEWER, STORM WATER FORCE MAIN, RECLAIMED WATER (NOTE 2) | WATER MAIN<br>3 FT. MINIMUM<br>OTHER PIPE | WATER MAIN<br>12 INCHES IS THE MINIMUM, EXCEPT FOR STORM SEWER, THEN 6 INCHES IS THE MINIMUM AND12 INCHES IS PREFERRED<br>OTHER PIPE | NOTE 4<br>WATER MAIN<br>JOINT (TYP.) |
| VACUUM SANITARY SEWER | WATER MAIN<br>10 FT PREFERRED<br>3 FT. MINIMUM<br>OTHER PIPE | WATER MAIN<br>12 INCHES IS PREFERRED 6 INCHES MINIMUM<br>OTHER PIPE | NOTE 4<br>WATER MAIN |
| GRAVITY SANITARY SEWER, (NOTE 3) SANITARY SEWER FORCE MAIN, RECLAIMED WATER | WATER MAIN<br>10 FT PREFERRED<br>6 FT. MINIMUM<br>OTHER PIPE | WATER MAIN<br>12 INCHES IS THE MINIMUM, EXCEPT FOR GRAVITY SEWER, THEN 6 INCHES IS THE MINIMUM AND 12 INCHES IS PREFERRED<br>OTHER PIPE | NOTE 4<br>WATER MAIN<br>OTHER PIPE (TYP.) |
| ON-SITE SEWAGE TREATMENT □ DISPOSAL SYSTEM | 10 FT. MINIMUM | — | — |

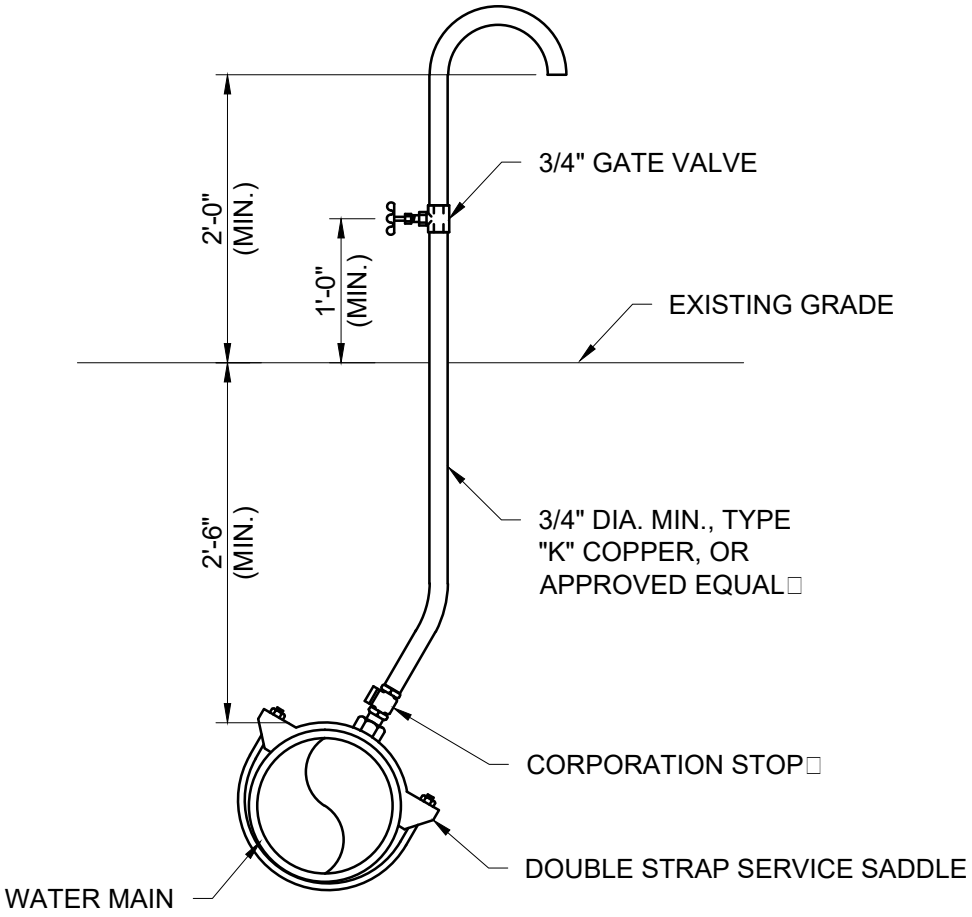
NOTES:

1. WATER MAIN SHOULD CROSS ABOVE OTHER PIPE. WHEN WATER MAIN MUST BE BELOW OTHER PIPE, THE MINIMUM SEPARATION IS 12 INCHES.

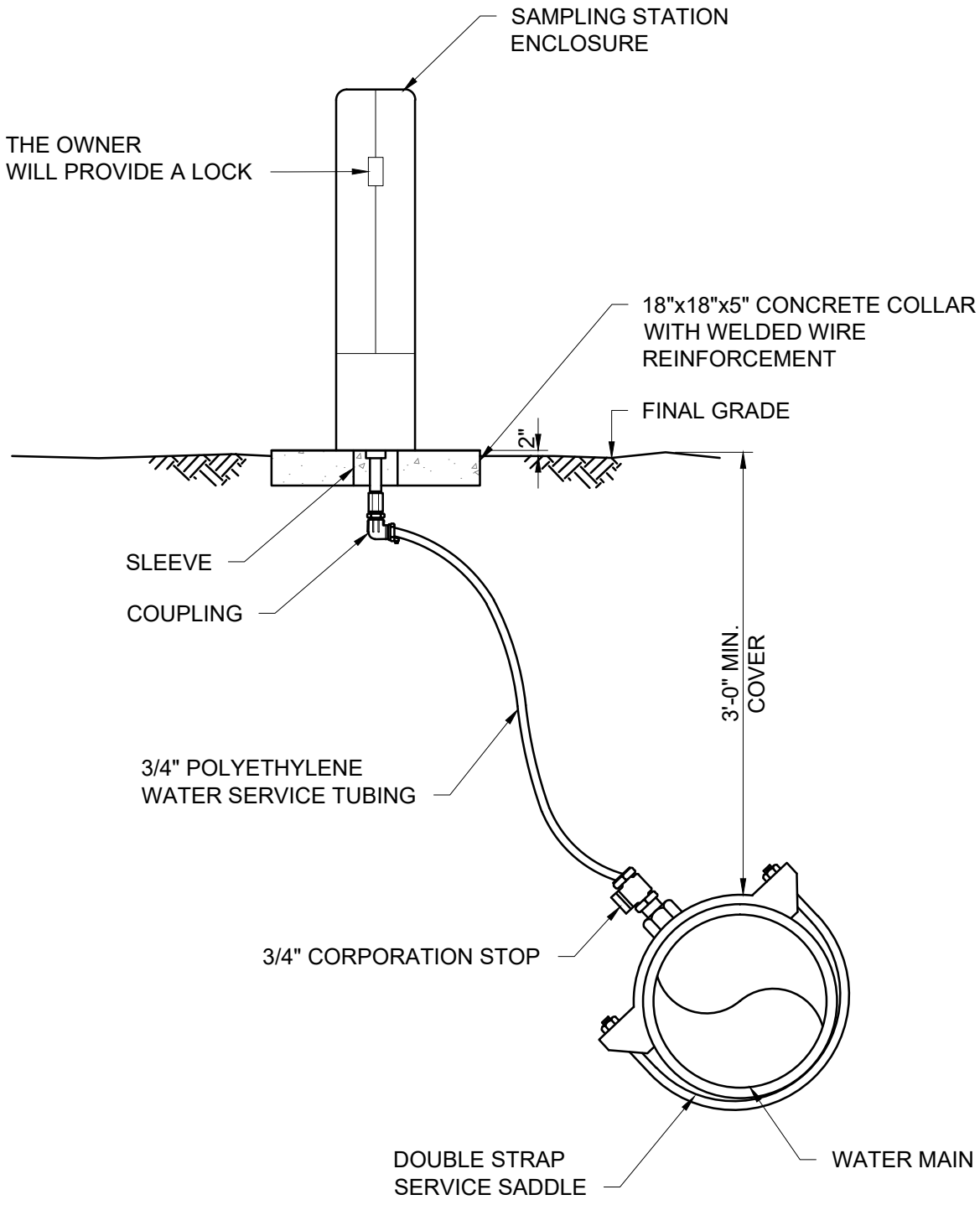
2. RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

3. 3 FT. FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.

4. ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPE SO THAT THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATE JOINT LOCATIONS ALLOWED UNDER FAC 62-555.314 WILL ONLY BE ALLOWED BY THE ENGINEER ON A CASE-BY-CASE BASIS.




□NOTE: AFTER TESTS REMOVE 3/4" TUBING
AND INSTALL PLUG ON CORPORATION STOP.



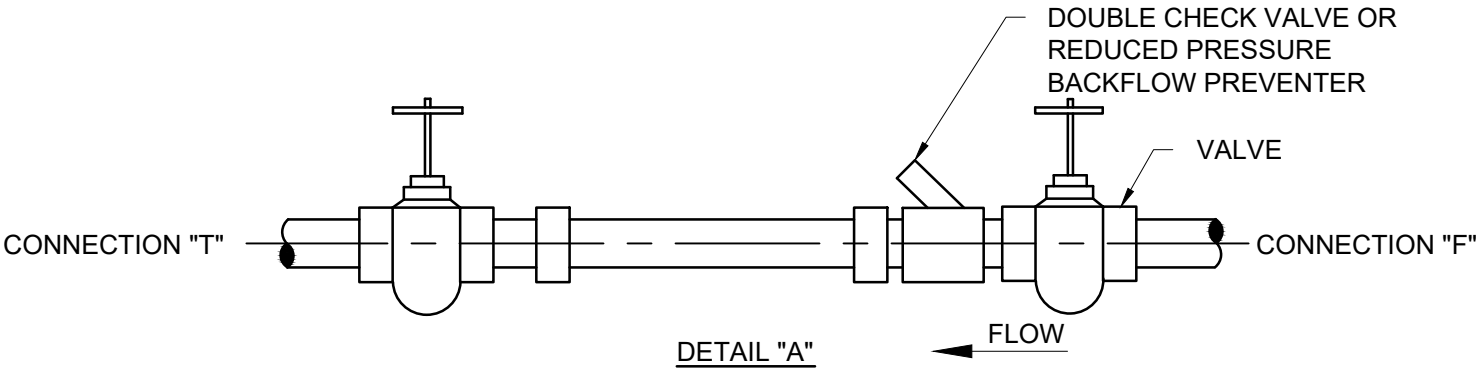

NOTES:

1. ENCLOSURE SHALL BE PAINTED CAST ALUMINUM. ENCLOSURE COLOR SHALL BE GREEN.
2. SAMPLING STATION STAND PIPE AND VALVES SHALL BE LEAD FREE SURGICAL STAINLESS STEEL.
3. FURNISH AND INSTALL ECLIPSE #88WC-SS BY KUPFERLE FOUNDARY COMPANY.

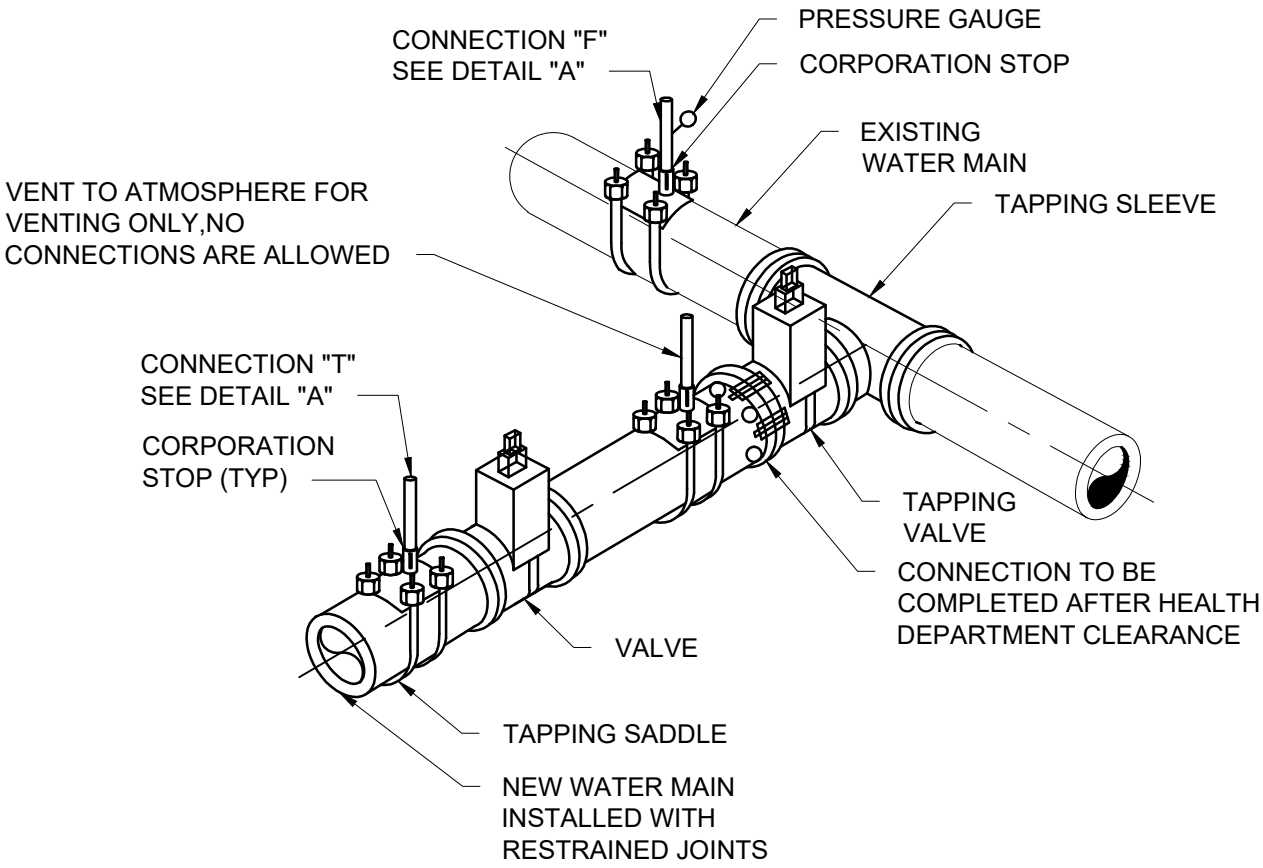
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

BACT SAMPLE POINT - PERMANENT

DETAIL NO.
WATR 003
REVISED:
2016/09/21




DETAIL "A"



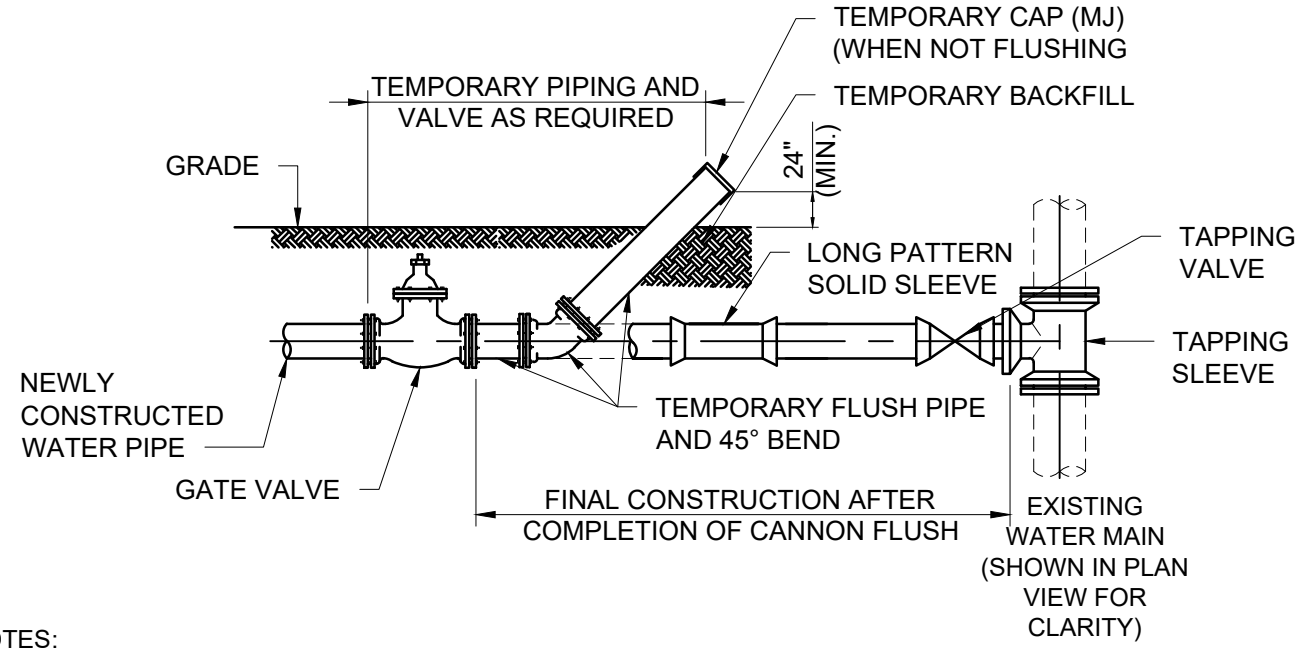

NOTES:

1. REMOVE TEMPORARY CONNECTION AT CORPORATION STOP ON EXISTING MAIN AFTER FILLING AND FLUSHING OF NEW LINE.

2. DO NOT REMOVE TEMPORARY CONNECTION AT CORPORATION STOP ON NEW MAIN UNTIL ALL TESTING HAS BEEN CLEARED BY HEALTH DEPARTMENT.

3. CLOSE CORPORATION STOPS AND PLUG/CAP WITH LEAD-FREE BRASS FITTINGS AFTER SAMPLING IS COMPLETED.

4. CONTRACTOR WILL INSTALL A PRESSURE GAUGE AT OR NEAR THE FILL AND FLUSH LOCATION AND MAINTAIN A MINIMUM PRESSURE OF 40 PSI AT ALL TIMES. THE FILL VALVE WILL BE OPENED AND CLOSED SLOWLY TO AVOID RAPID PRESSURE CHANGES IN THE WATER SYSTEM.




NOTES:

1. FLUSHING LOCATIONS ARE TO BE PROPOSED BY CONTRACTOR AND APPROVED BY ENGINEER OF RECORD.
2. UPON COMPLETION OF THE PIPE INSTALLATION FOR ANY SECTION, THE MAINS SHALL BE CANNON FLUSHED TO REMOVE DIRT AND ANY OTHER FOREIGN MATTER.
3. INSTALL A TEMPORARY 45° BEND, VALVE AND ASSOCIATED TEMPORARY PIPING AS SHOWN TO DIRECT THE FLUSHING WATER AWAY FROM THE IMMEDIATE WORK AREA AND EXERCISE DUE CARE SO AS TO ENSURE THAT THE WATER USED IN FLUSHING DOES NOT CAUSE A NUISANCE OR INFLICT PROPERTY DAMAGE.
4. BENDS AND PIPING SHALL BE THE SAME SIZE OR LARGER AS THE LINE BEING FLUSHED.
5. PRIOR TO THE ACTUAL LINE FLUSHING OPERATION THE CONTRACTOR SHALL PROPERLY NOTIFY OWNER'S INSPECTOR OF SUCH INTENDED WATER USE.
6. NO EXISTING VALVES SHALL BE OPERATED, EXCEPT BY AUTHORIZED OWNER PERSONNEL.
7. FLUSHING SHALL NOT BE ACCOMPLISHED WITHOUT THE ACTUAL PRESENCE OF THE OWNER'S INSPECTOR.
8. AFTER THE LINE UNDER CONSTRUCTION HAS BEEN SUCCESSFULLY FLUSHED, THE CONTRACTOR SHALL REMOVE THE TEMPORARY PIPING ARRANGEMENT AND PROCEED WITH THE REMAINING CONSTRUCTION AS SPECIFIED.
9. ALL PIPING SHALL BE RESTRAINED.
10. CONTRACTOR WILL INSTALL A PRESSURE GAUGE AT OR NEAR THE FILL AND FLUSH LOCATION AND MAINTAIN A MINIMUM PRESSURE OF 40 PSI AT ALL TIMES. THE FILL VALVE WILL BE OPENED AND CLOSED SLOWLY TO AVOID RAPID PRESSURE CHANGES IN THE WATER SYSTEM.
11. CONTRACTOR IS CAUTIONED THAT GOVERNING AGENCIES OR UTILITIES MAY HAVE REGULATIONS LIMITING OR PROHIBITING DISCHARGE INTO SEWERS, SURFACE WATERS, CANALS, DITCHES AND OTHER CONVEYANCES/RETENTION AREAS. ALL COMPLIANCE WITH GOVERNING AGENCY REQUIREMENTS (INCLUDING PERMITTING, IF REQUIRED) IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
12. CANNON FLUSHING TO PROCEED AFTER HEALTH DEPARTMENT CLEARANCE IS RECEIVED.

# FLUSHING CONNECTION

NOT TO SCALE

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
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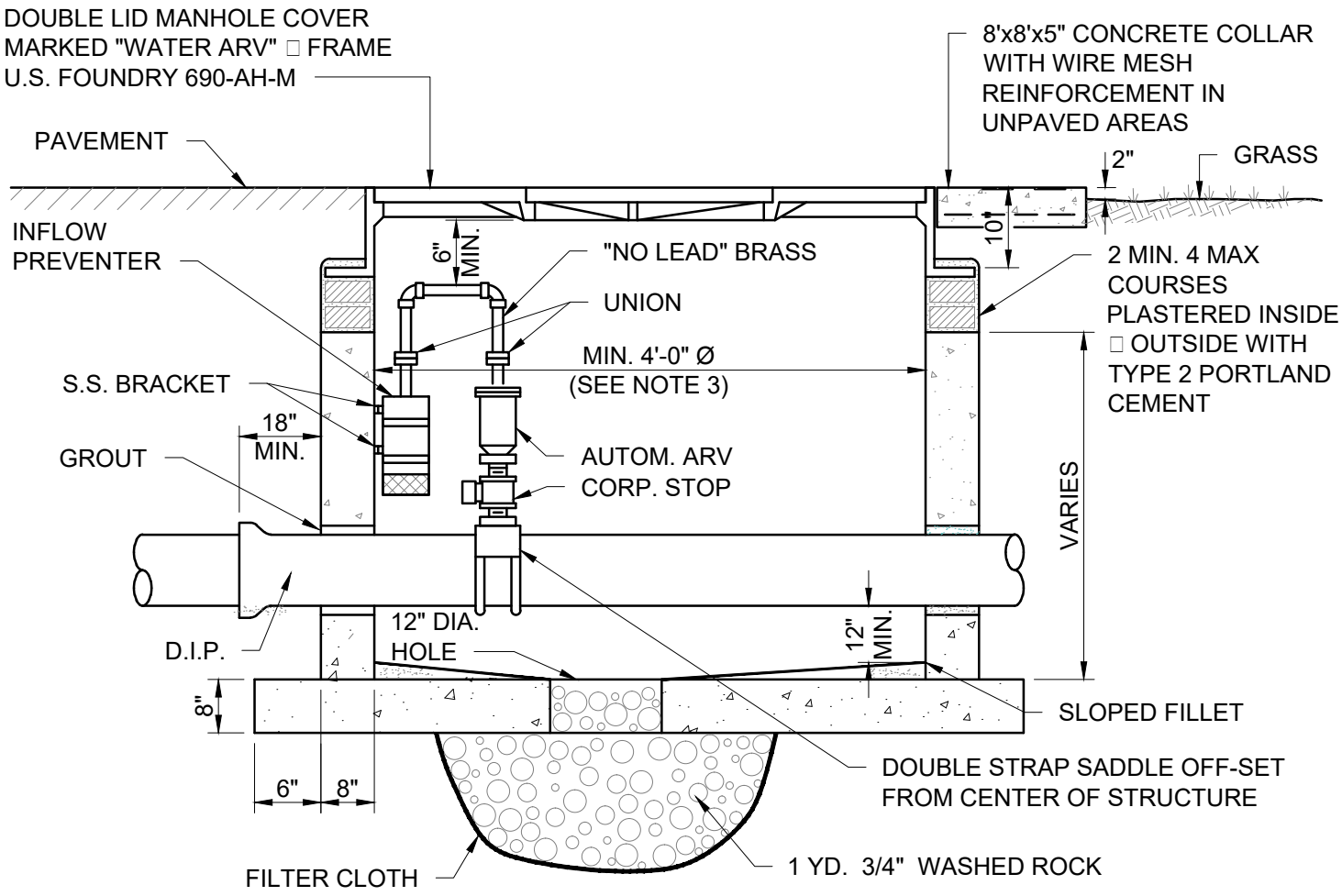
CANNON FLUSHING

DETAIL NO.
WATR
005

REVISED:
2016/04/24




NOTES:

1. MANHOLE SHALL BE PRECAST AND DESIGNED BY FABRICATOR TO COMPLY WITH FDOT INDEX 200.

2. DUCTILE IRON PIPE IS REQUIRED WITHIN THE MANHOLE. NO PIPE JOINTS INSIDE OF MANHOLE.

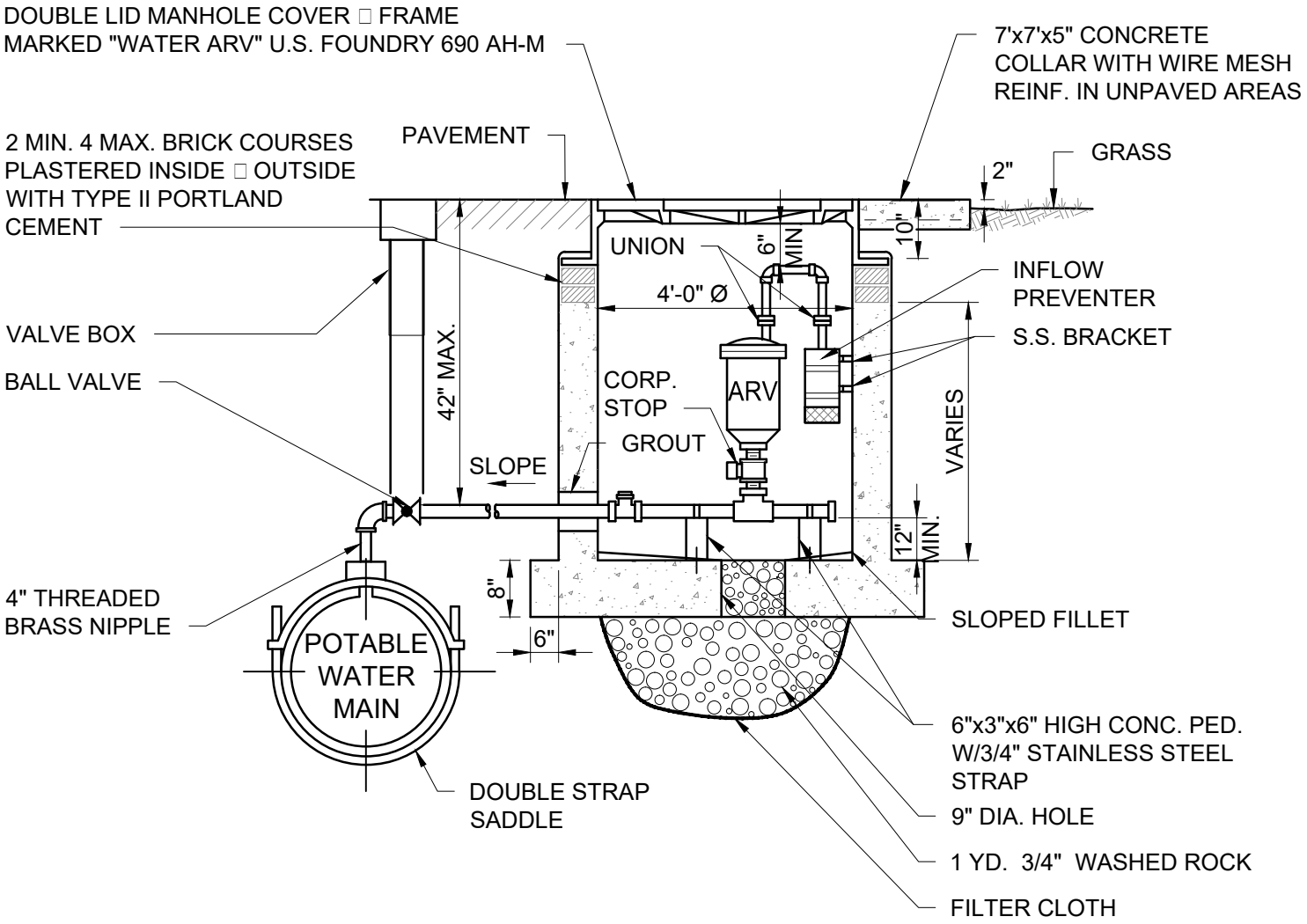
3. LARGER MANHOLES REQUIRED FOR PIPES LARGER THAN 12", AS FOLLOWS:

| PIPE SIZE | MIN. MANHOLE DIAMETER |
|---|---|
| 16"- 24" | 60" |
| 30" - 42" | 72" |

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

AUTOMATIC AIR RELEASE VALVE
FOR AREAS THAT FLOOD
TYPE 1

DETAIL NO.
WATR
006
REVISED:
2016/04/24




NOTES:

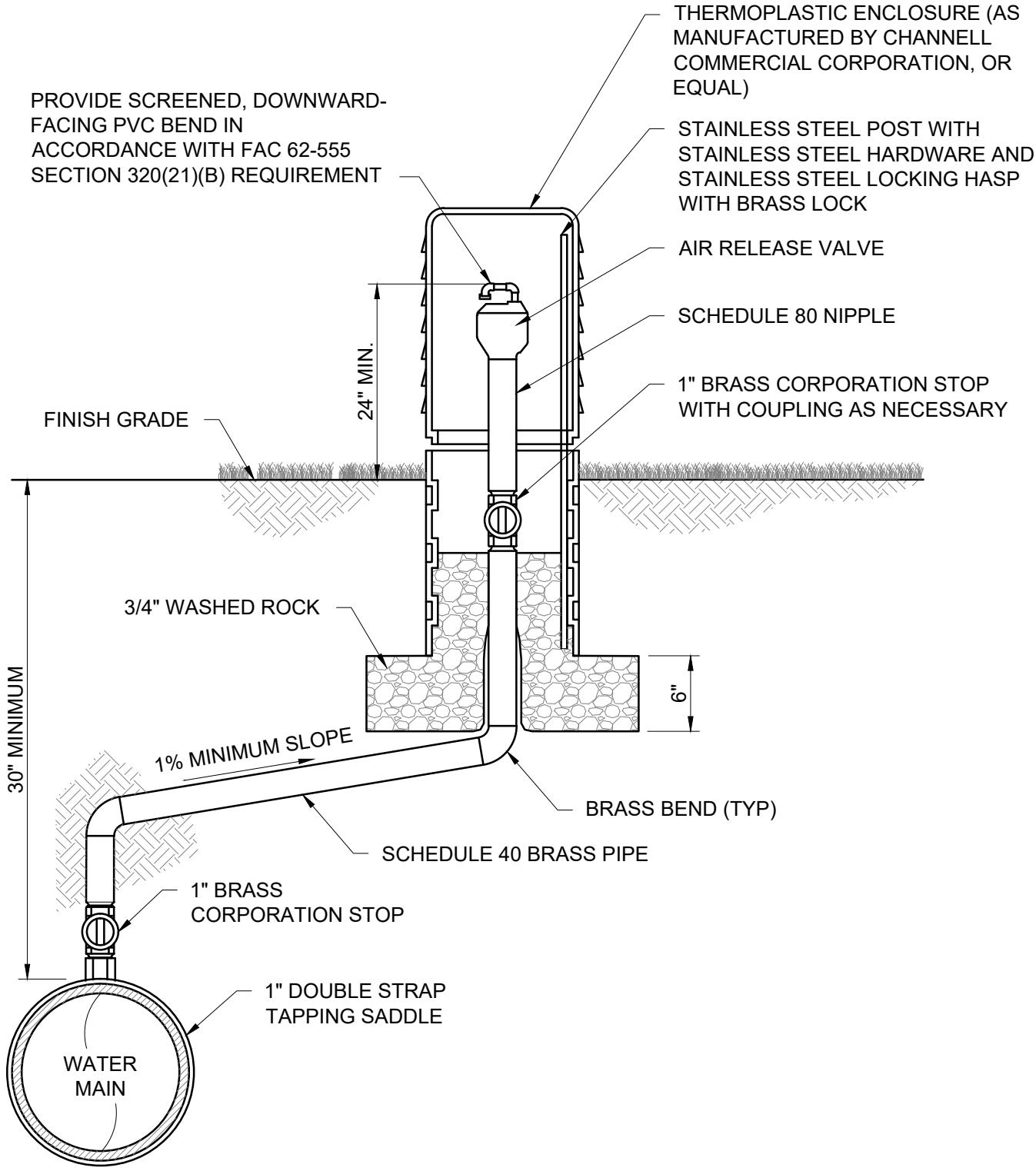
1. MANHOLE SHALL BE PRECAST AND DESIGNED BY FABRICATOR TO COMPLY WITH FDOT INDEX 200.

2. ALL VALVES, PIPING AND FITTINGS SHALL BE LEAD-FREE BRASS OR BRONZE.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

AUTOMATIC AIR RELEASE VALVE
FOR AREAS THAT FLOOD
TYPE 2

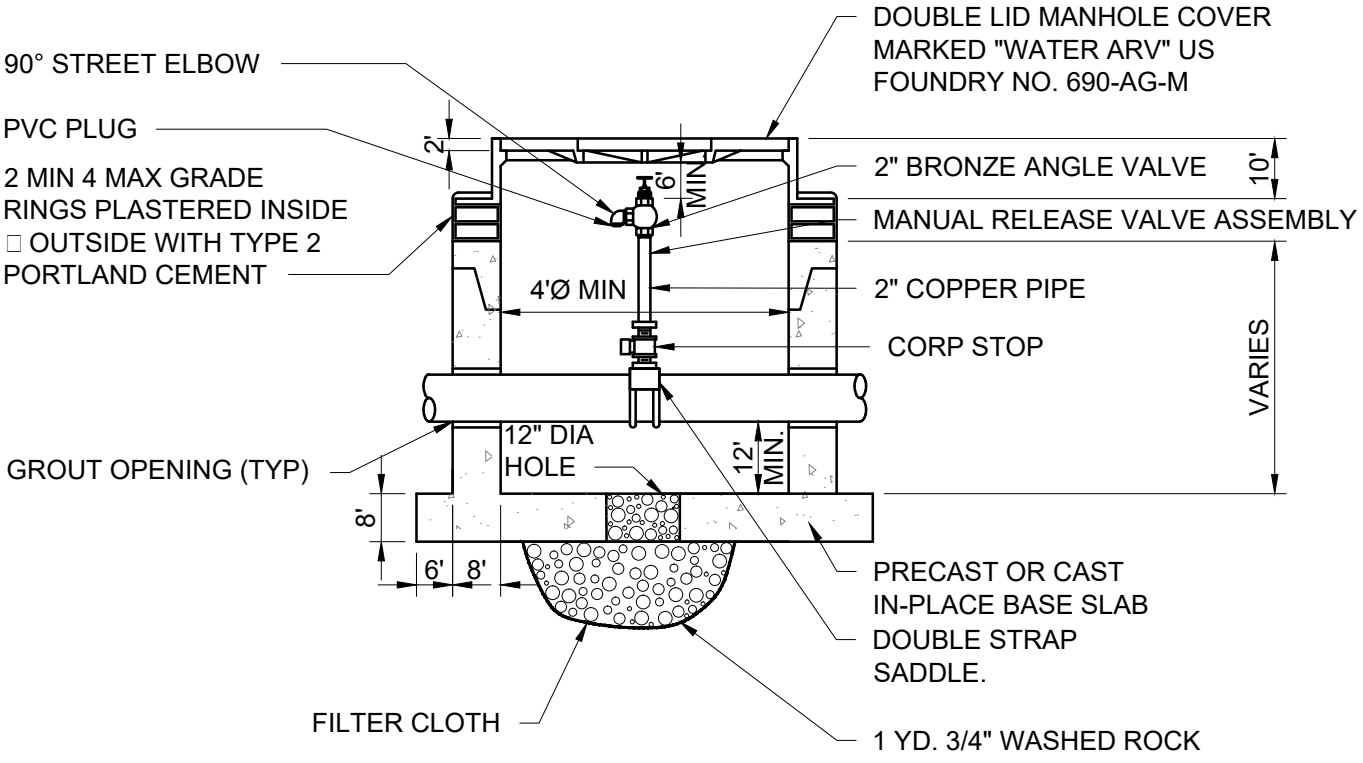
DETAIL NO.
WATR
007
REVISED:
2016/0[illegible]/21




CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

AUTOMATIC AIR RELEASE VALVE
FOR AREAS THAT FLOOD
TYPE 3

DETAIL NO.
WATR
008
REVISED:
2016/0[illegible]/23



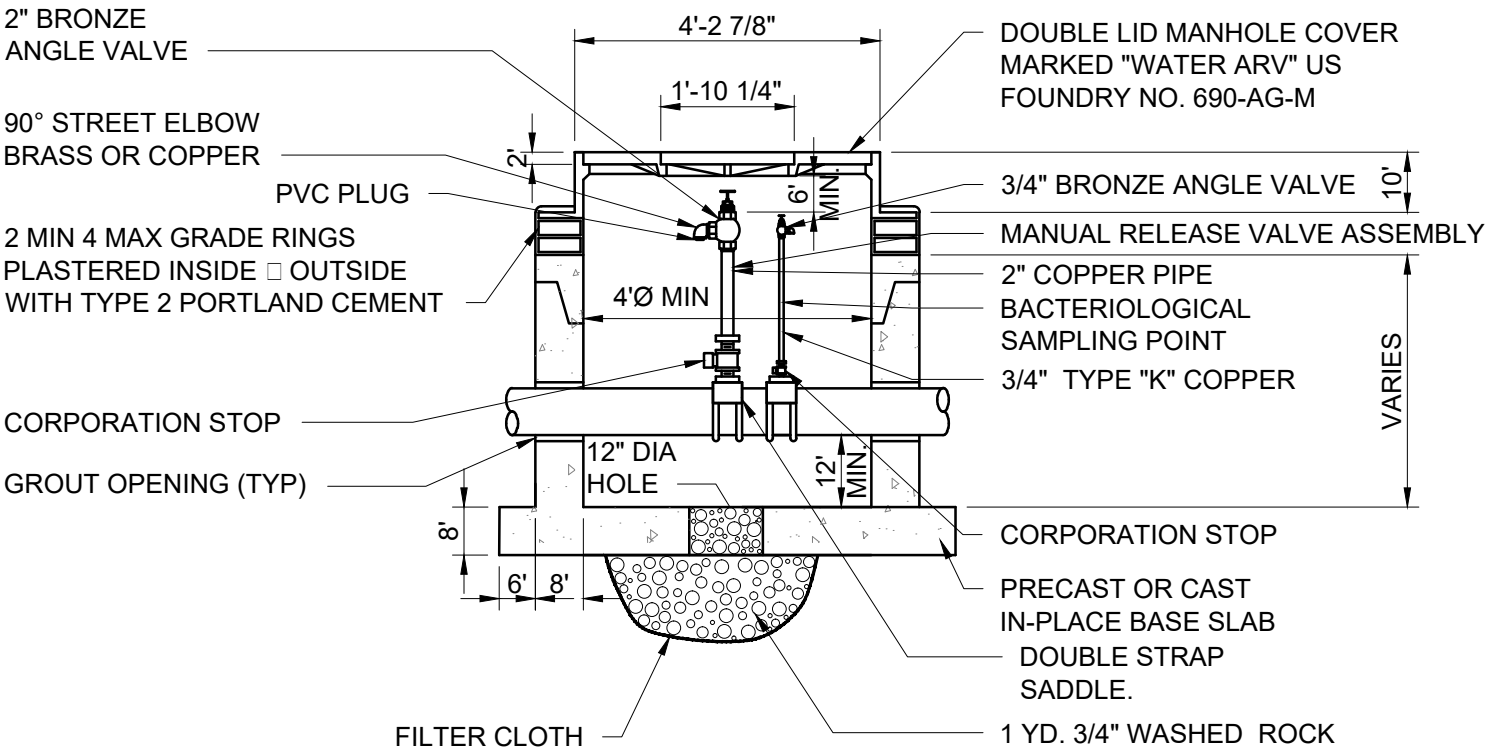

NOTES:

1. MANHOLE SHALL BE PRECAST AND DESIGNED BY FABRICATOR TO COMPLY WITH FDOT INDEX 200.
2. DUCTILE IRON PIPE IS REQUIRED WITHIN THE MANHOLE. NO PIPE JOINTS WITHIN THE MANHOLE.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

MANUAL AIR RELEASE VALVE
FOR AREAS THAT FLOOD
TYPE 1

DETAIL NO.
WATR
009
REVISED:
2016/0[illegible]/23



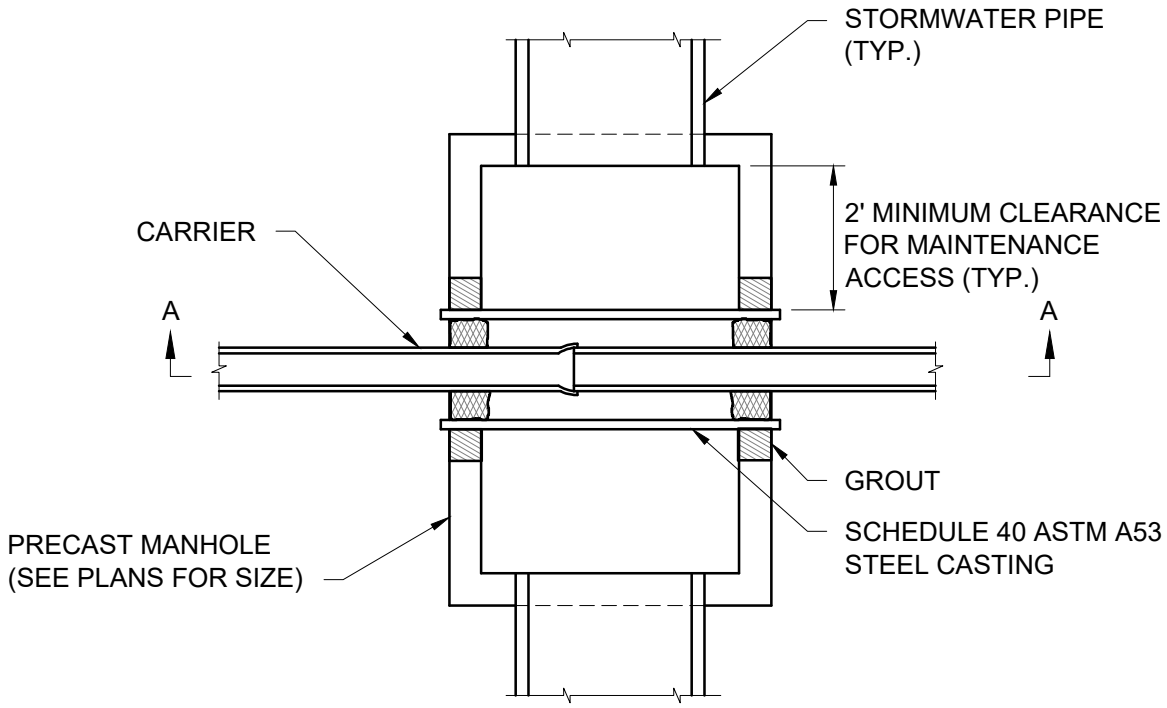

NOTES:

1. MANHOLE SHALL BE PRECAST AND DESIGNED BY FABRICATOR TO COMPLY WITH FDOT INDEX 200.
2. DUCTILE IRON PIPE IS REQUIRED WITHIN THE MANHOLE. NO PIPE JOINTS WITHIN THE MANHOLE.
3. AFTER COMPLETION OF THE BACTERIOLOGICAL TESTING, REMOVE THE SAMPLE PIPING AND INSTALL PLUG ON THE CORPORATION STOP.

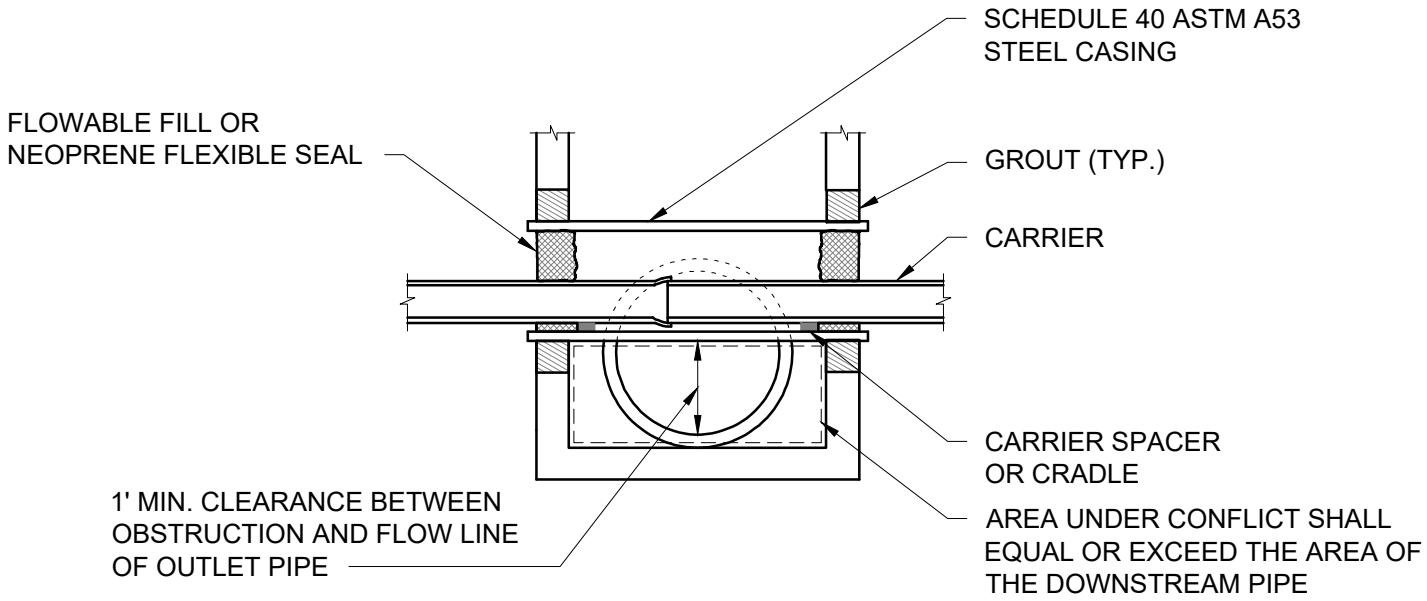
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

MANUAL AIR RELEASE VALVE
FOR AREAS THAT FLOOD
TYPE 2

DETAIL NO.
WATR
010
REVISED:
2016/0[illegible]/25




PLAN

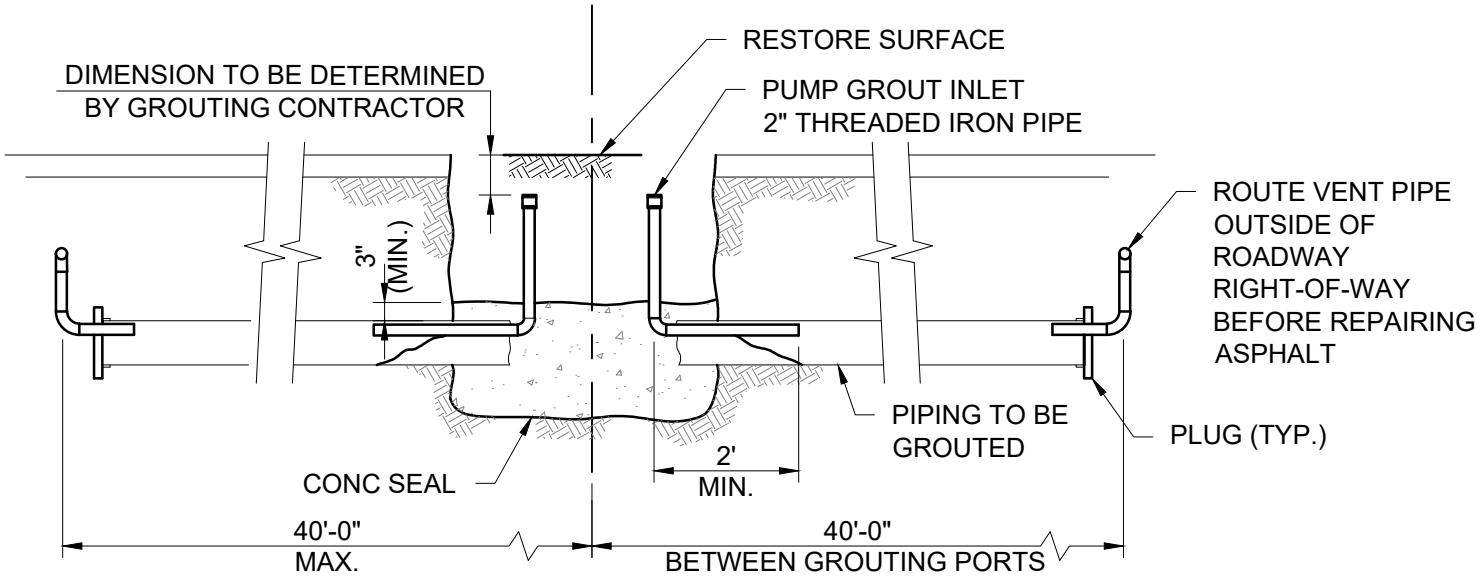



SECTION A-A

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

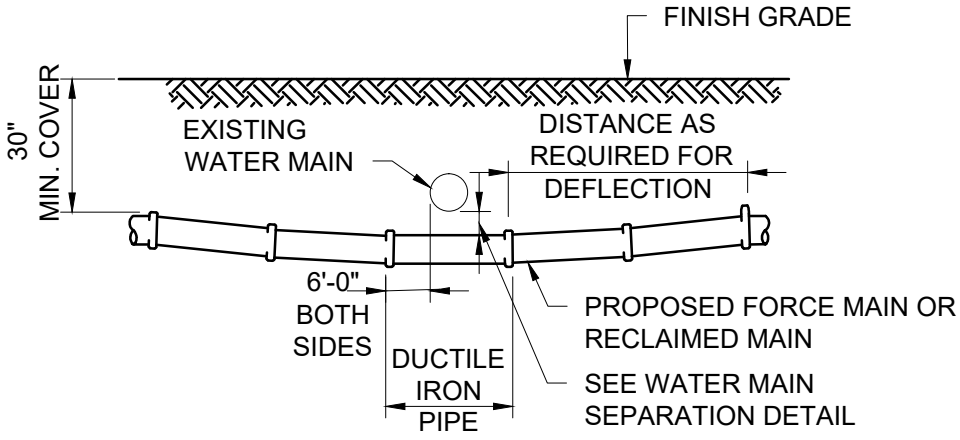
CONFLICT MANHOLE

DETAIL NO.
WATR
011
REVISED:
2016/0□/2□

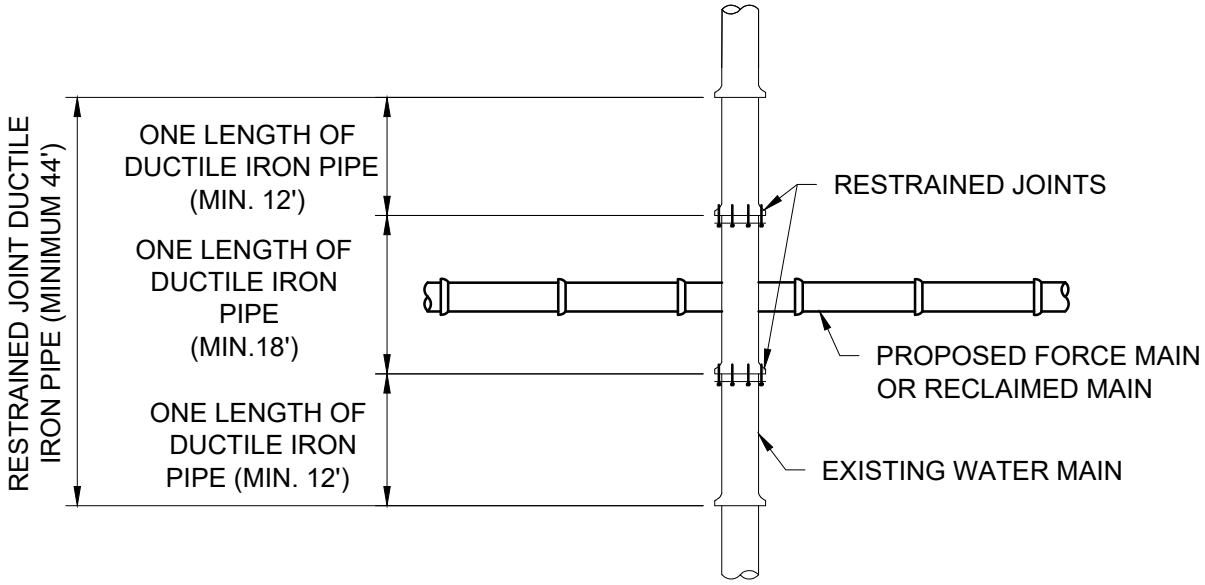



NOTE:

1. PROVIDE PLUGS, CORPORATION STOPS AND PIPING AS REQUIRED TO REMOVE AIR FROM THE ABANDONED PIPELINES WHILE GROUTING.




SECTION




PLAN

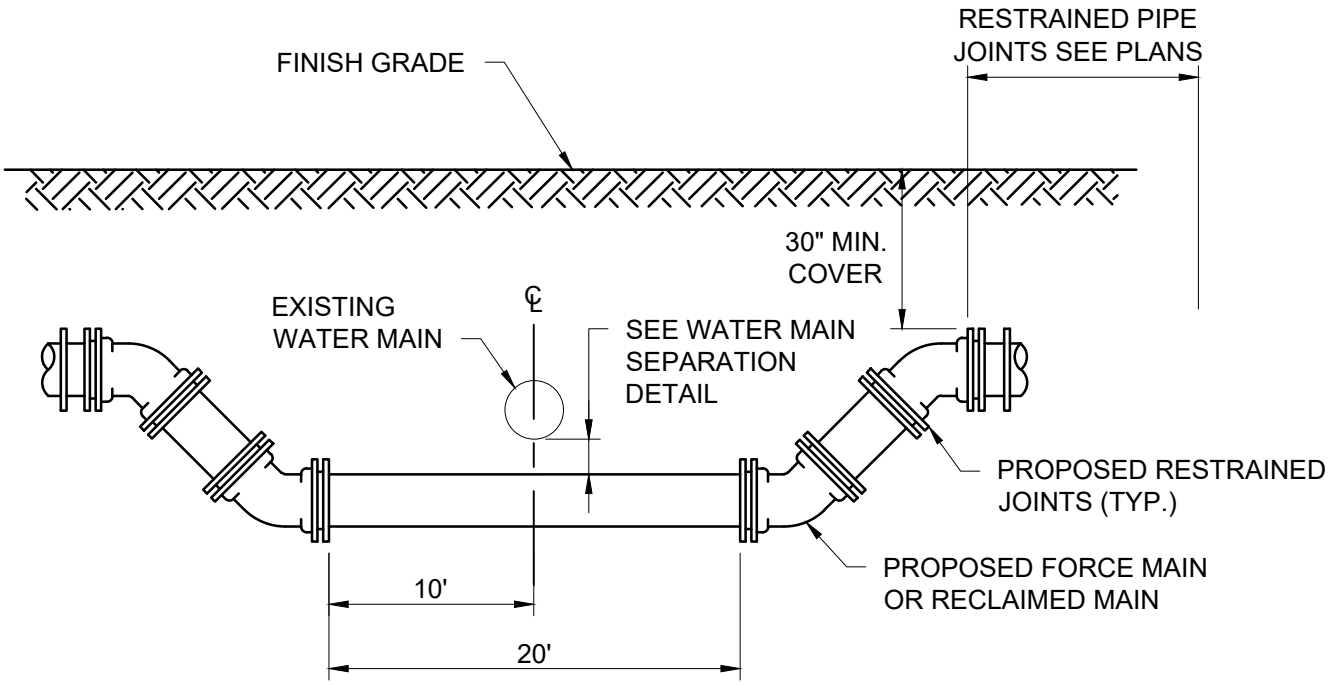
NOTE:

1. JOINTS SHALL NOT BE DEFLECTED MORE THAN 50% OF MANUFACTURER'S RECOMMENDED DEFLECTION.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

UTILITY CROSSING
DEFLECTION TYPE

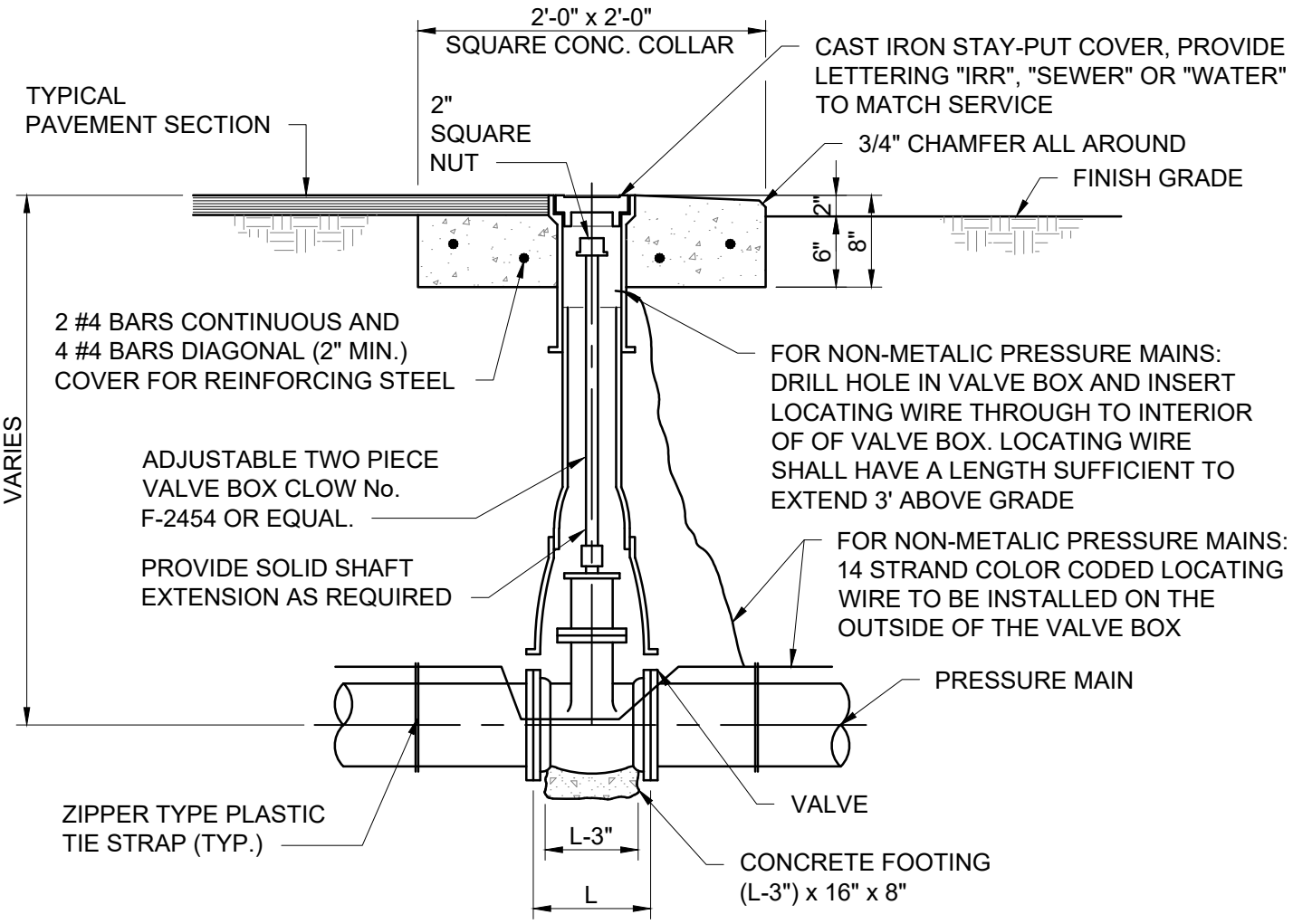
DETAIL NO.
WATR 013
REVISED:
2016/0[illegible]/21




SECTION

NOTE:

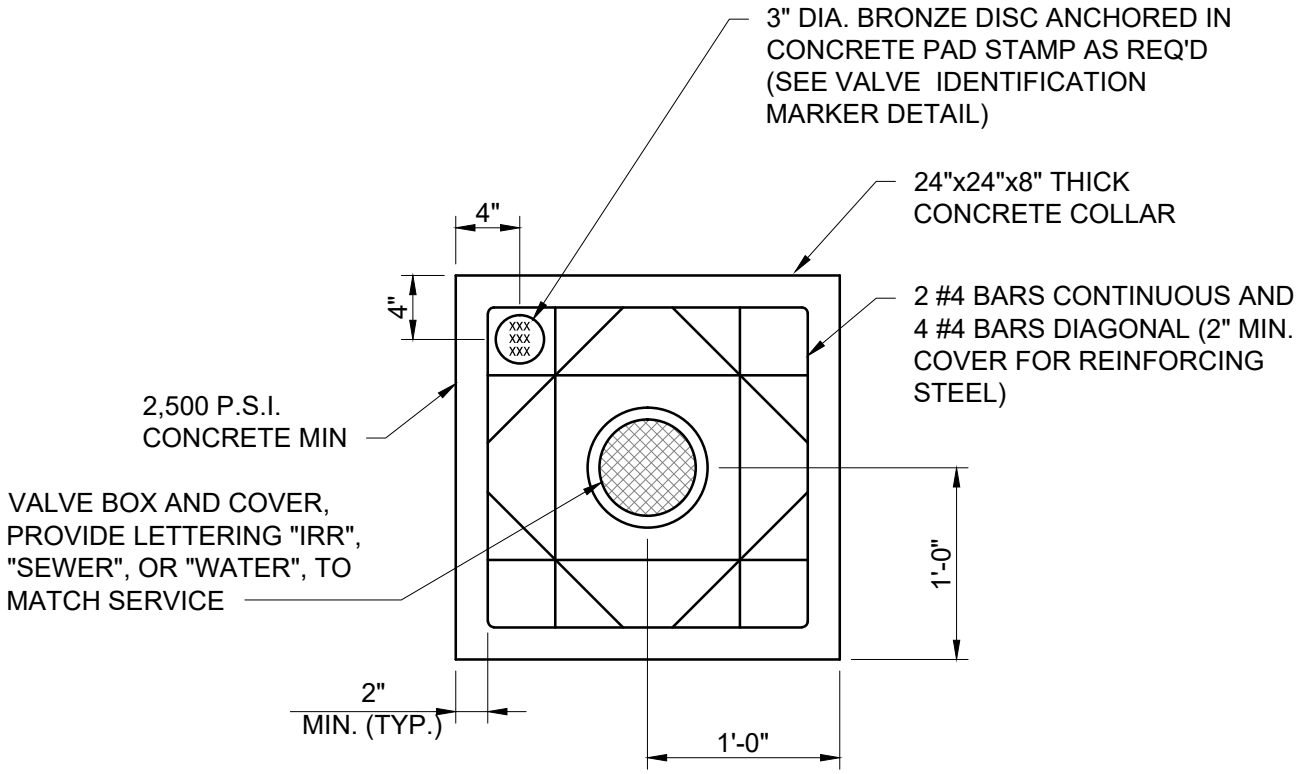
1. WHEREVER POSSIBLE, DEFLECTION OF THE PIPE (PER THE DETAIL TITLED "UTILITY CROSSING - DEFLECTION TYPE") SHALL BE USED TO AVOID EXISTING OBSTRUCTIONS. THIS DETAIL SHALL BE USED ONLY WHEN APPROVED BY ENGINEER.




CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

VALVE BOX

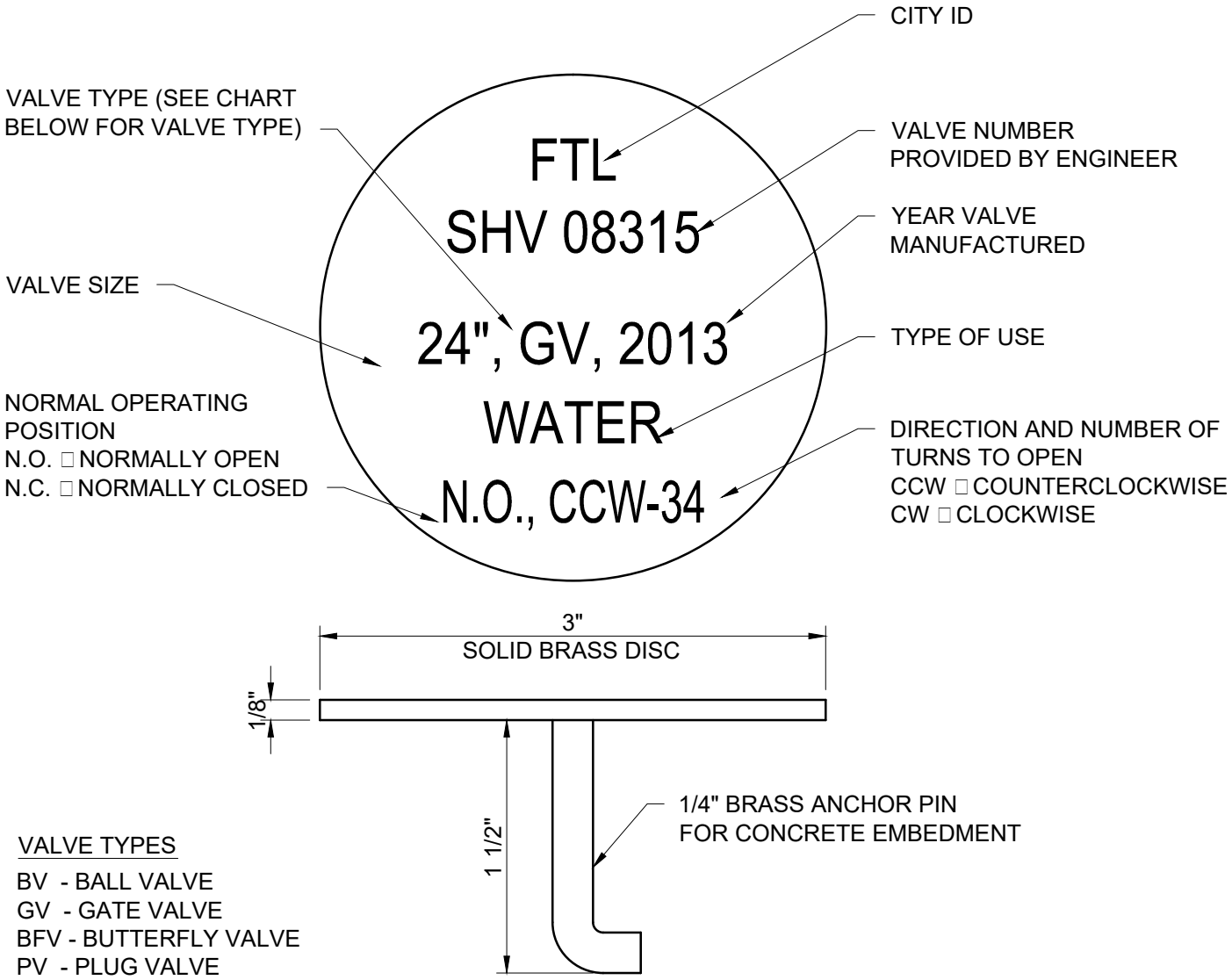
DETAIL NO.
WATR 015
REVISED:
2016/04/21




CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

VALVE BOX COLLAR

DETAIL NO.
WATR 016
REVISED:
2016/04/25




VALVE TYPES

BV - BALL VALVE
GV - GATE VALVE
BFV - BUTTERFLY VALVE
PV - PLUG VALVE

NOTES:

1. VALVE INFORMATION TO BE ENGRAVED INTO TOP SURFACE WITH 1/4" CAPITAL LETTERS.
2. ENTIRE MARKER TO BE COATED WITH CLEAR EPOXY TO PREVENT TARNISHING.
3. MARKERS SHALL BE MANUFACTURED BY WAGER COMPANY OF FLORIDA.

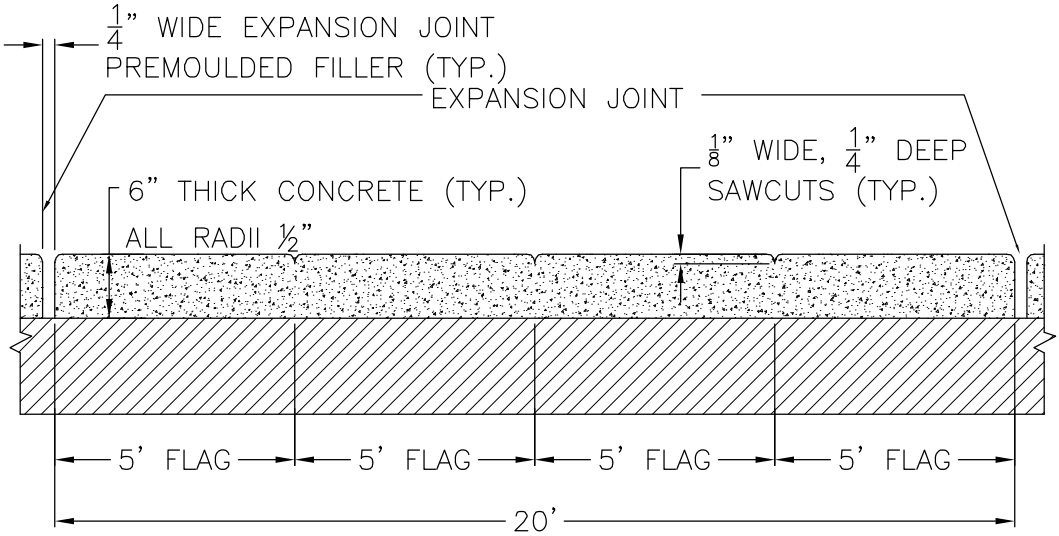
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

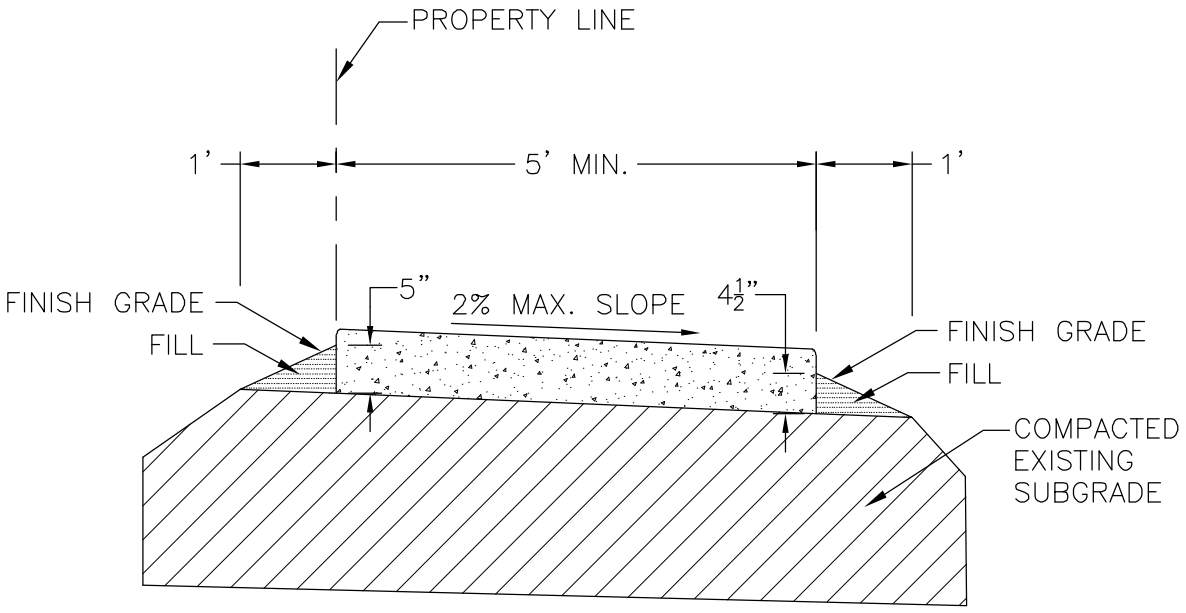
VALVE ID MARKER

DETAIL NO.
WATR 017
REVISED:
2016/0[illegible]/23

# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER



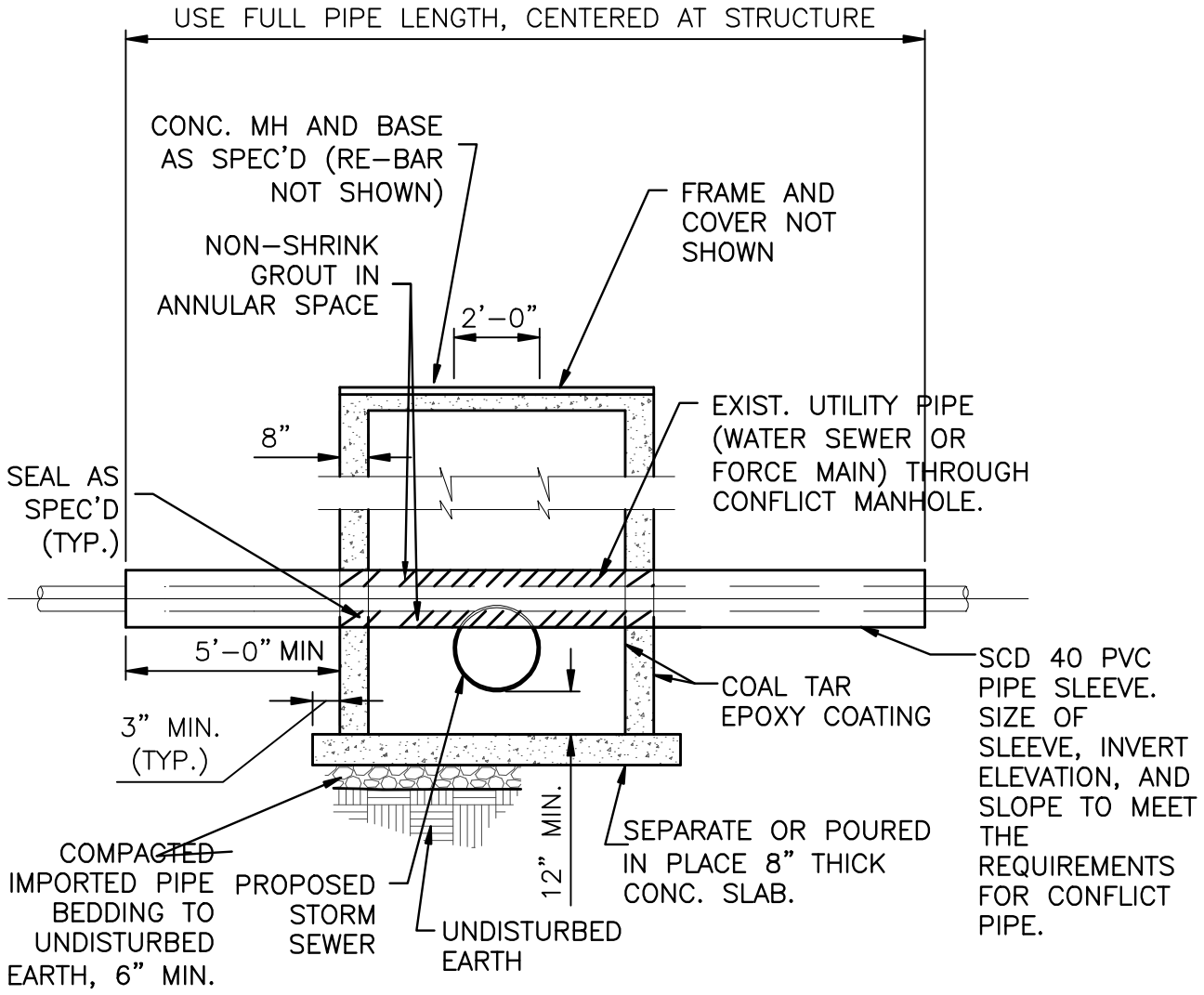

## NOTES:

1. A MINIMUM OF 6" THICK SIDEWALK IS REQUIRED ON ALL SIDEWALK APPLICATIONS.
2. CONCRETE STRENGTH SHALL BE 3000 P.S.I.
3. THE USE OF REINFORCEMENT WILL NOT BE PERMITTED.
4. SIDEWALK SLOPES SHALL MEET THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA).

| DATE: JAN.'82 | SCALE: N.T.S. | SIDEWALK CONSTRUCTION | C |
|---|---|---|---|
| REVISED: OCT. 2015 | DRAWN BY: | | 2.1 |

# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




## SECTION

NOTES:
1. CONTRACTOR SHALL DETERMINE PIPE SIZES, PIPE INVERT ELEVATIONS AND ANGLES OF PIPE ENTRY AND EXIT.
2. ALL CONFLICT MANHOLES SHALL CONFORM TO THE REQUIREMENTS SHOWN ON THE CITY OF FORT LAUDERDALE ENGINEERING PLAN AND SPECS.

| | | | |
|---|---|---|---|
| DATE: FEB.'06 | SCALE: N.T.S. | **CONFLICT MANHOLE FOR NEW STORM SEWERS** | **D** |
| REVISED: MARCH '09 | DRAWN BY: A.C. | | **3.2** 1 OF 2 |

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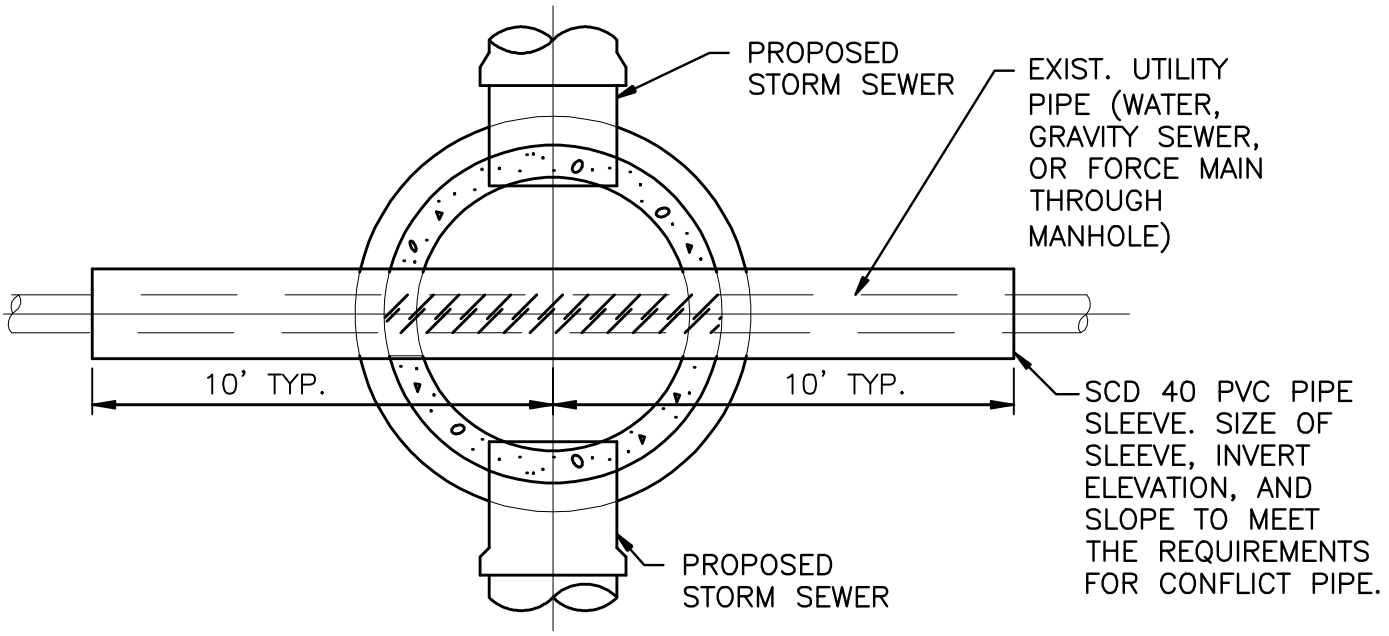
# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




**PLAN**

| | | | |
|---|---|---|---|
| DATE: FEB.'06 | SCALE: N.T.S. | **CONFLICT MANHOLE FOR NEW STORM SEWERS** | **D** **3.2** 2 OF 2 |
| REVISED: MARCH '09 | DRAWN BY: A.C. | | |

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# CITY OF FORT LAUDERDALE

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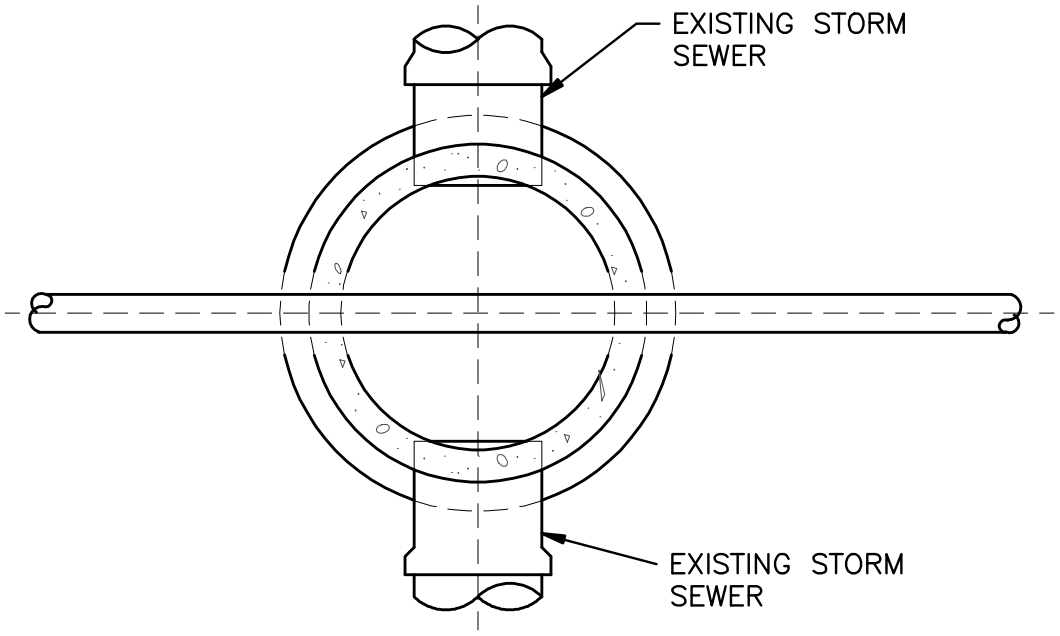
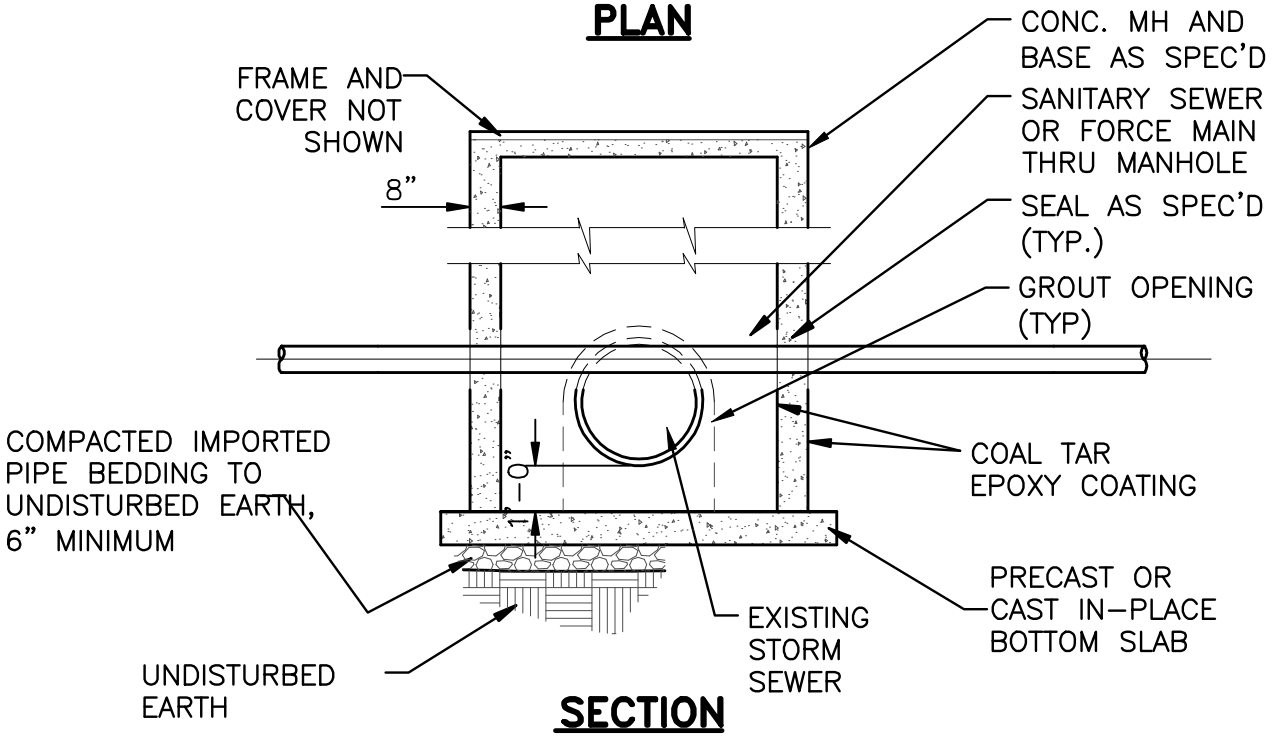



**PLAN**




**SECTION**

NOTE: CONTRACTOR SHALL DETERMINE PIPE SIZES, PIPE INVERT ELEVATIONS AND ANGLES OF PIPE ENTRY AND EXIT.

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **CONFLICT MANHOLE FOR SANITARY SEWER THROUGH EXISTING STORM SEWER (IN ACCORDANCE W/FDOT #301)** | **D 3.3** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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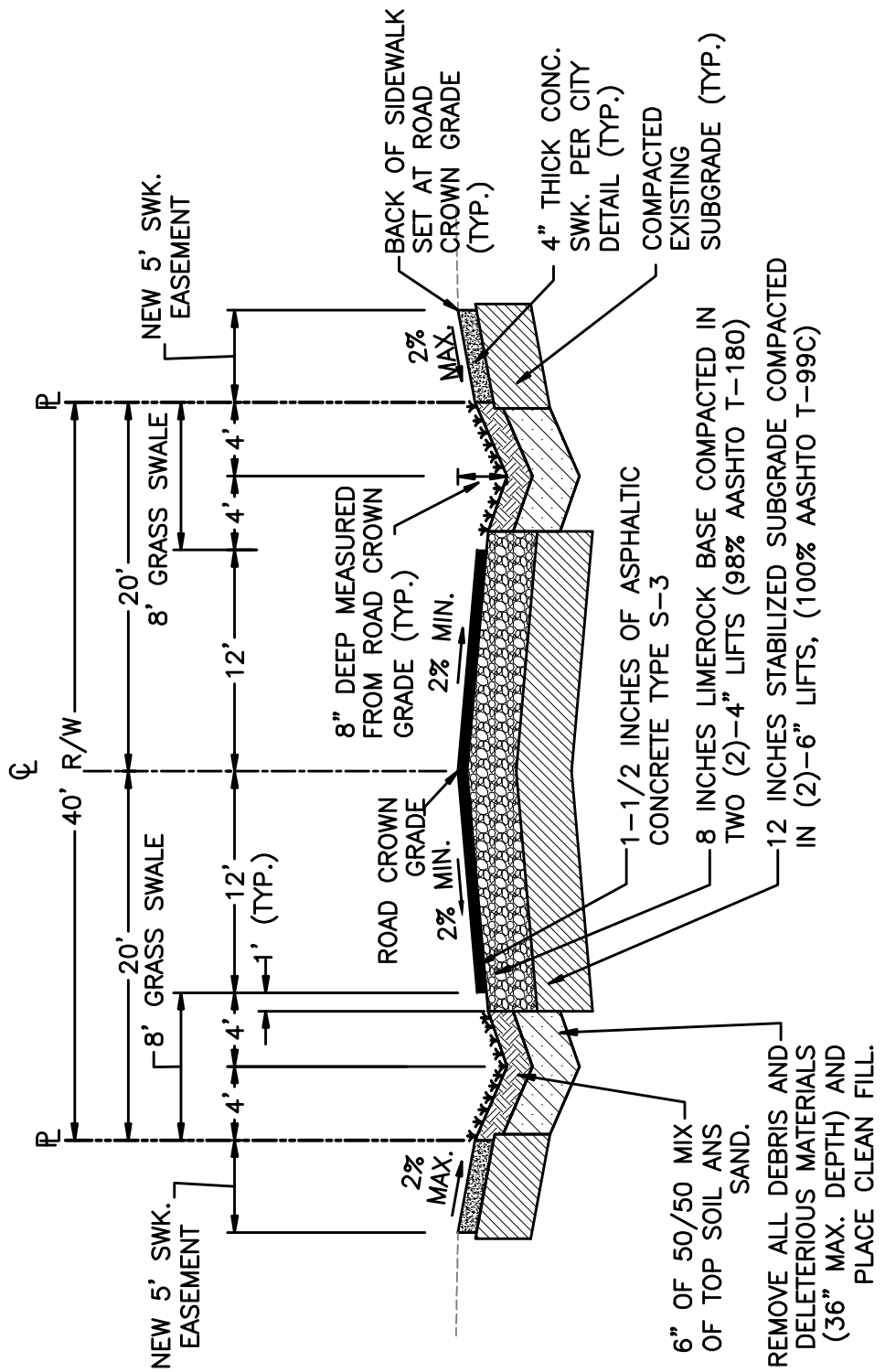
# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




| DATE: JAN. '82 | SCALE: N.T.S. | TYPICAL ROAD | P |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: | 40' RIGHT-OF-WAY | 1.1 |

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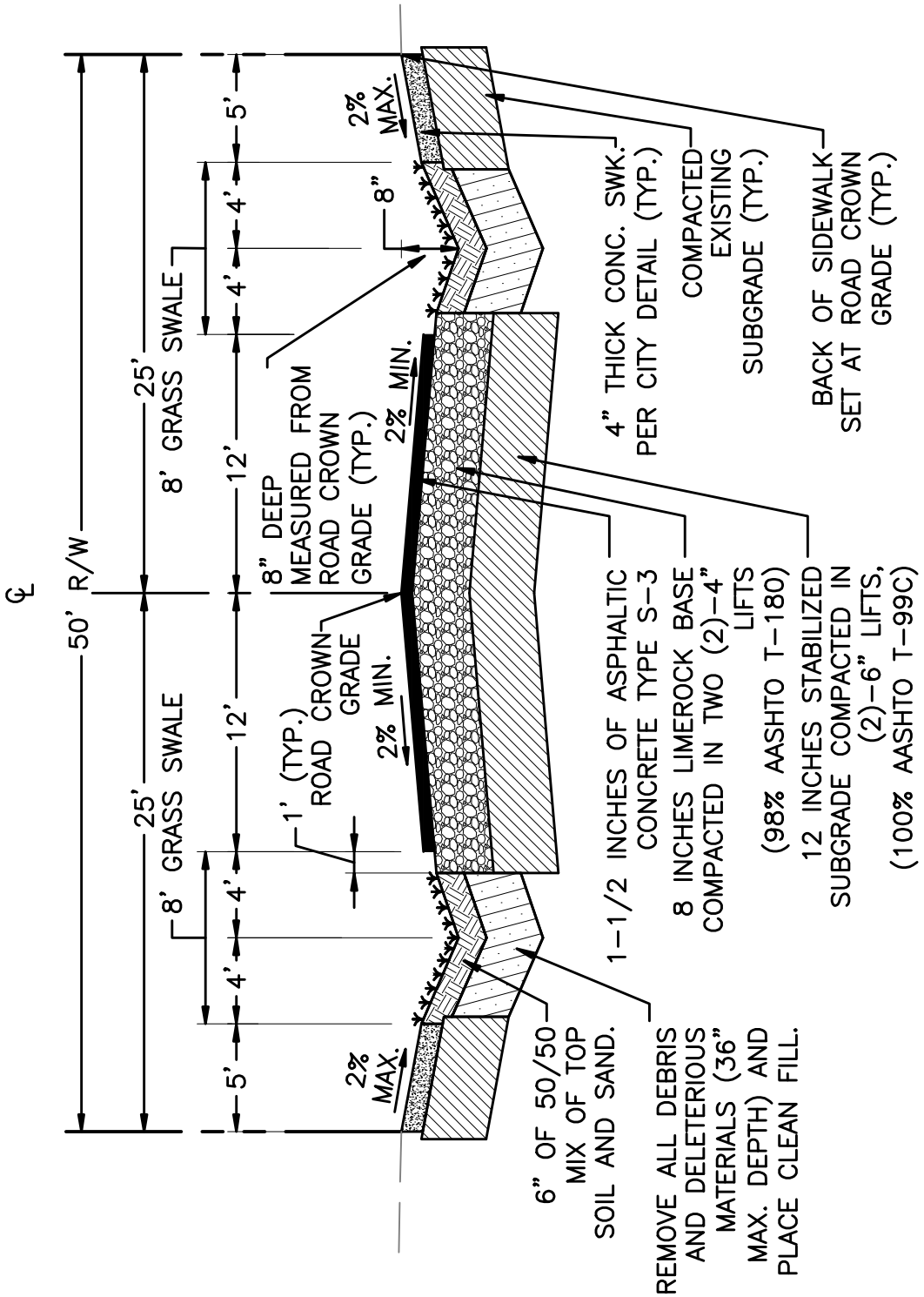
# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




| DATE: JAN.'82 | SCALE: N.T.S. | TYPICAL ROAD | P |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: | 50' RIGHT-OF-WAY | 2.1 |

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# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER

NOTES:

1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
2. MAINTAIN MIN. TEN (10) FEET HORIZONTAL DISTANCE BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN. MAINTAIN MIN. THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN. VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.
3. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.
4. FITTINGS SHALL BE RESTRAINED.
5. THE DEFLECTION TYPE CROSSING IS PREFERRED.
6. DO NOT EXCEED 75% OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE. NO DEFLECTION AT THE JOINT IS ALLOWED FOR P.V.C. PIPE. BENDING OF P.V.C. PIPE SHALL NOT EXCEED THE FOLLOWING PARAMETERS:

| PVC PIPE SIZE (INCH) | MIN. ALLOWED RADIUS (FT.) | MAX. DEFLECTION (INCH) PER 20' LENGTH |
|---|---|---|
| 6" | 300 | 8" |
| 8" | 400 | 6" |
| 10" | 600 | 4" |
| 12" | 600 | 4" |

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **PRESSURE PIPE CONFLICT NOTES** | **P 401** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE
## OFFICE OF THE CITY ENGINEER

## I. FORCE MAIN AND WATER MAIN OUTSIDE OF WELLFIELD PROTECTION ZONE

MAXIMUM QUANTITY OF WATER (GALLONS PER HOUR) THAT MAY BE SUPPLIED TO MAINTAIN PRESSURE WITHIN 5 P.S.I. OF THE SPECIFIED TEST PRESSURE.

(MECHANICAL OR PUSH–ON JOINT, 18 FT. NOMINAL LENGTHS, PER 1000 FT. OF PIPE)

| AVG. TEST PRESSURE | PIPE DIAMETER (INCHES) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PSI | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 |
| 150 | 0.10 | 0.14 | 0.18 | 0.27 | 0.37 | 0.46 | 0.55 | 0.64 | 0.73 | 0.83 | 0.92 | 1.10 | 1.38 |

NOTES:

1. TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9.

2. THE MAXIMUM QUANTITY OF ADDED WATER FOR A PIPELINE IS CALCULATED BY MULTIPLYING THE QUANTITY PER HOUR AS OBTAINED FROM THE ABOVE TABLE, BY THE DURATION OF THE TEST IN HOURS, AND BY THE TOTAL LENGTH OF THE LINE BEING TESTED DIVIDED BY 1,000. IF THE LINE UNDER TEST CONTAINS SECTIONS OF VARIOUS DIAMETERS, THE MAXIMUM QUANTITY ADDED WILL BE THE SUM OF THE COMPUTED QUANTITIES FOR EACH SIZE.

3. MAXIMUM TEST LENGTH = 2,500 FEET PER SECTION.

4. THIS STANDARD SHALL REFLECT ANY REVISION OF A.W.W.A. C–600–05. HOWEVER, THE MAXIMUM QUANTITY OF WATER ADDED SHALL NOT EXCEED 50% OF RECOMMENDED LIMIT PER APPLICABLE AWWA C–600–05 STANDARD.

| DATE: FEB'06 | SCALE: N.T.S. | PRESSURE TEST CRITERIA | P 403 1 OF 2 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE
## OFFICE OF THE CITY ENGINEER

CONTINUES:

5. STANDARD TEST PRESSURE = 150 P.S.I.
6. FORMULA BASIS: $L = \frac{(S)x(D)x(P)^{\frac{1}{2}}}{133,200}$

   L = MAXIMUM QUANTITY OF WATER TO BE ADDED (GALLONS PER HOUR)
   S = LENGTH OF PIPE TESTED (FEET)
   D = DIAMETER OF PIPE (INCHES)
   P = TEST PRESSURE (P.S.I.)

7. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.

8. DISINFECTION OF MAINS SHALL COMPLY WITH A.N.S.I./A.W.W.A. C-651-05 STANDARD.

9. DUCTILE IRON WATER MAIN PIPE SHALL CONFORM TO THE REQUIREMENTS OF A.N.S.I./A.W.W.A. C-151-'02.

## II. FORCE MAIN AND WATER MAIN WITHIN WELLFIELD PROTECTION ZONE.

NOTES:

1. PRESSURE TEST PROCEDURE TO FOLLOW THE CURRENT AWWA C-600-05 STANDARD (150psi, (2) HOUR DURATION). THERE SHALL BE NO PRESSURE DROP IN THE PIPE DURING THE TEST ("ZERO" FILL-UP TOLERANCE).

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | PRESSURE TEST CRITERIA | P 403 2 OF 2 |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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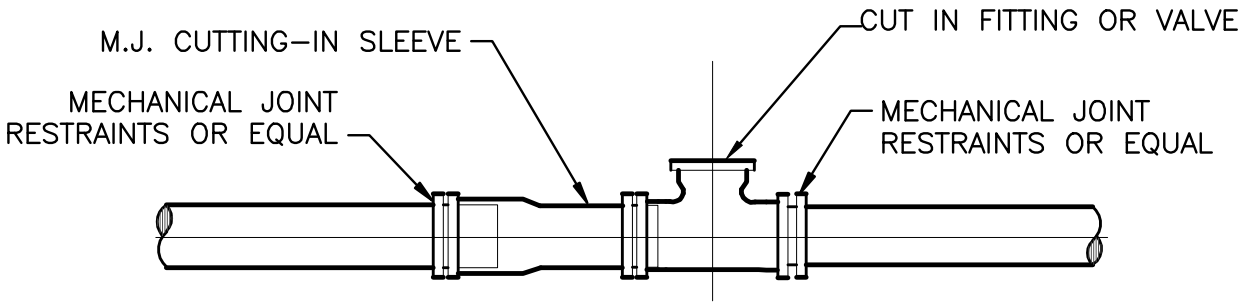
# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




## DUCTILE IRON–MECHANICAL JOINT (FORCE MAIN)

1. MECHANICAL JOINTS RESTRAINTS ARE REQUIRED THROUGHOUT ASSEMBLY.

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | PRESSURE PIPE STANDARD CUT-IN DETAIL | P 404 |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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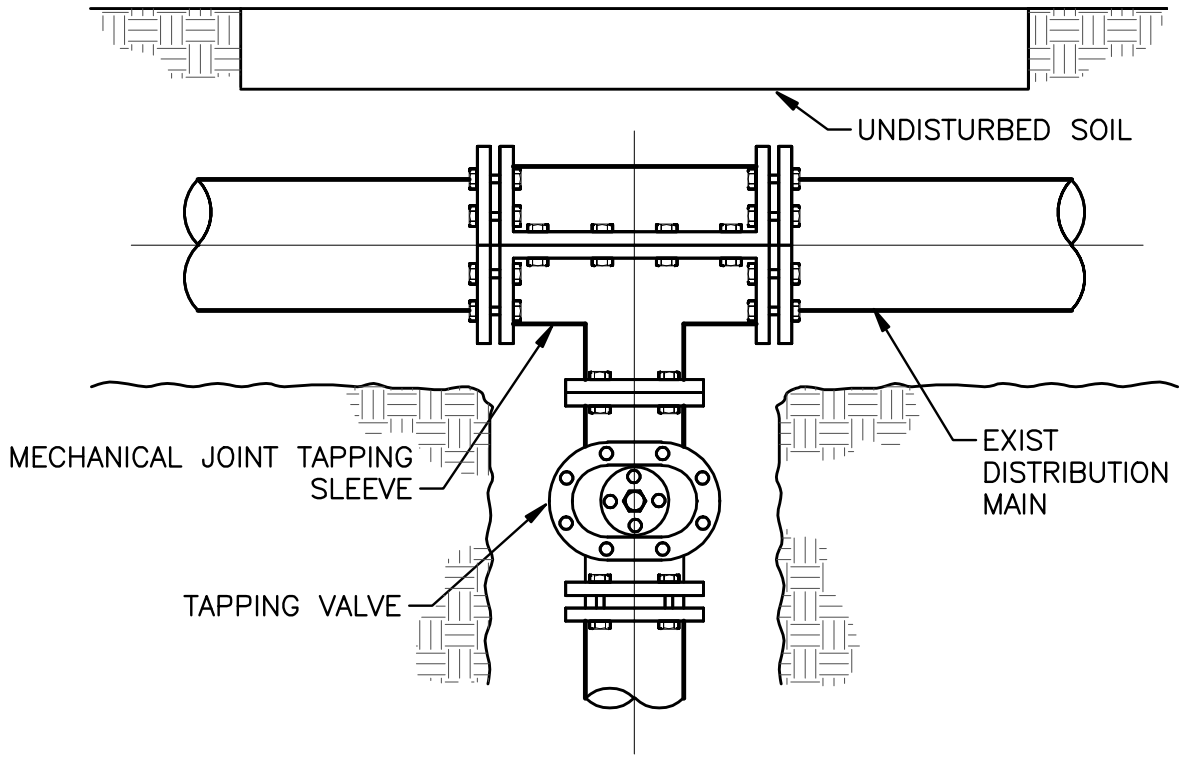
# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




| | | | |
|---|---|---|---|
| DATE: FEB'08 | SCALE: N.T.S. | **PLAN VIEW TAPPING TEE ASSEMBLY DETAIL** | **P 405** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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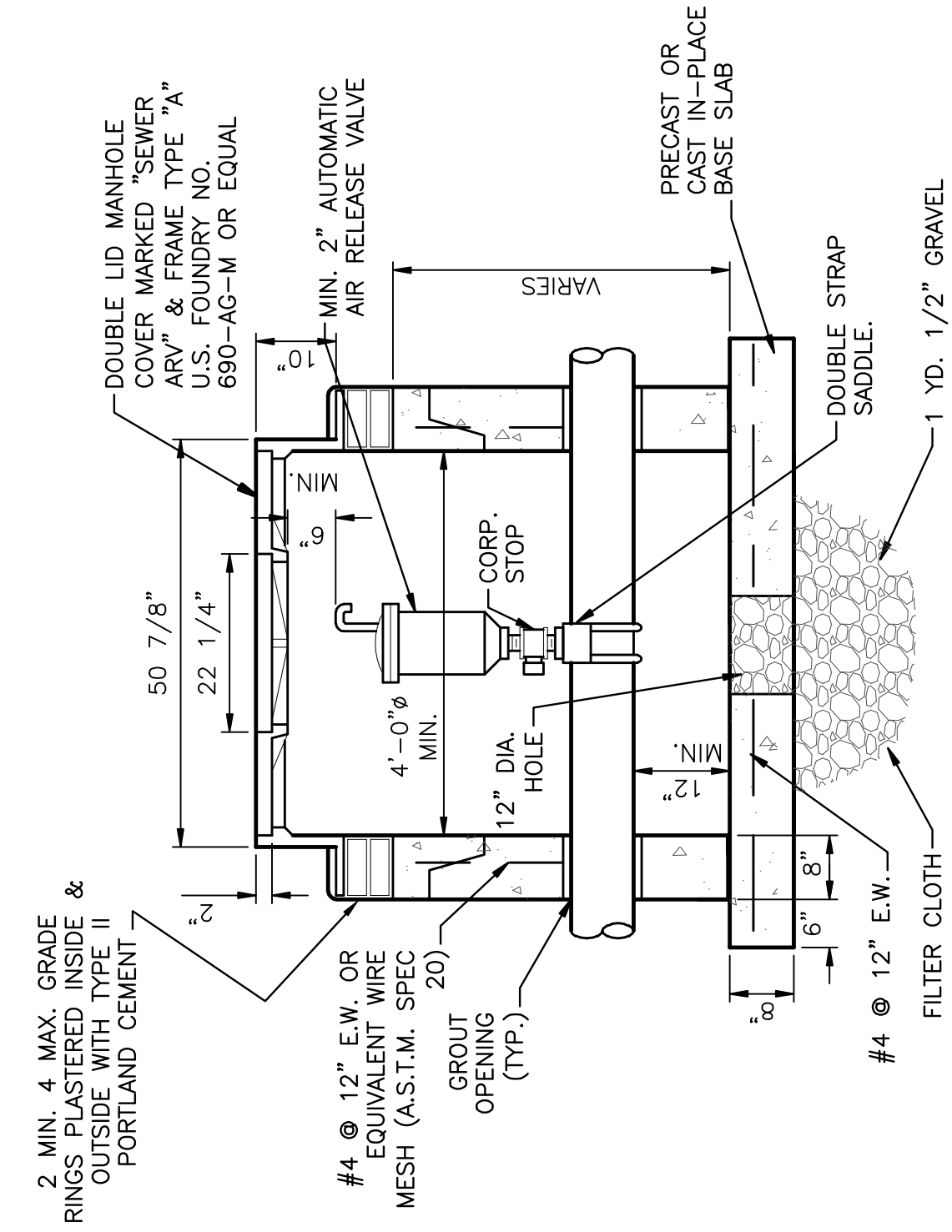



| DATE: FEB'06 | SCALE: N.T.S. | AIR RELEASE VALVE AND MANHOLE IN PAVED AREAS | P 407 1 OF 2 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

P:\dwg\INTERNAL\DETAILS\CLEAN DETAILS\DETAILS FOR BLUE BOOK\CFL-BB-P407.DWG, 3/12/2009 11:12:17 AM, RamonC

# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER

NOTES:

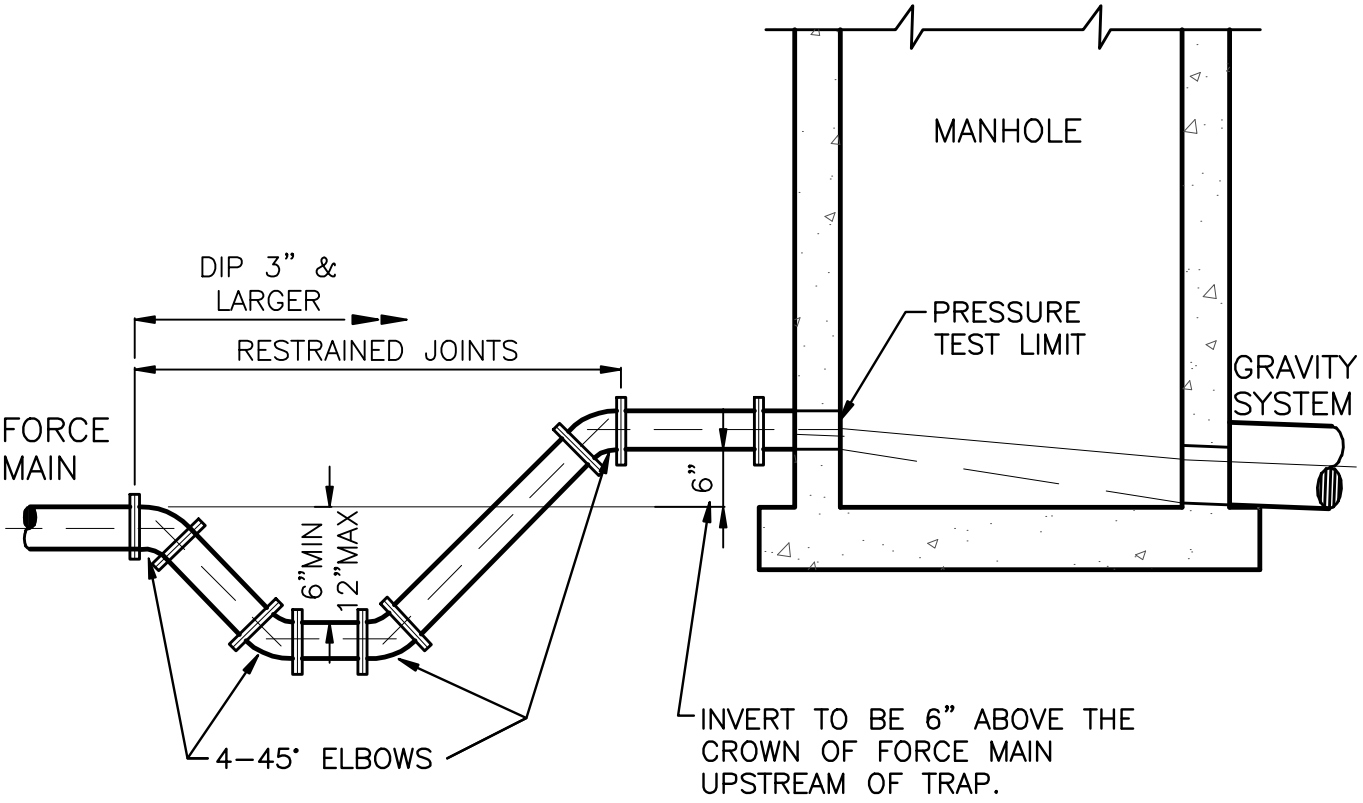
1. PRECAST CONCRETE TYPE # 4000 P.S.I.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. LIFT HOLES ARE PERMITTED.
4. ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
6. PAINT INSIDE & OUTSIDE WITH 2 COATS OF AN APPROVED PROTECTIVE COATING. (MIN. 10 MIL D.F.T. PER COAT.)
7. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE PAVEMENT, SEE DETAIL.
8. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED (2"MIN.).
9. CONSTRUCTION JOINT AT BASE IS PERMITTED.
10. DUCTILE IRON PIPE IS REQUIRED THROUGH THE MANHOLE.
11. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO LAYERS OF TEFLON TAPE.
12. IF MANHOLE IS LARGER THAN 4' DIAMENTER USE REDUCING GRADE RING OR CONE SECTION.
13. USE CONFLICT TYPE MANHOLE WITH PRECAST OR CAST IN-PLACE BOTTOM SLAB.

| DATE: FEB'06 | SCALE: N.T.S. | AIR RELEASE VALVE AND MANHOLE IN PAVED AREAS | P 407 1 OF 2 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

P:\dwg\INTERNAL\DETAILS\CLEAN DETAILS\DETAILS FOR BLUE BOOK\CFL-BB-P407.DWG, 3/12/2009 11:12:22 AM, RamonC

# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




NOTES:

1. FORCE MAIN TO ENTER MANHOLE AS CLOSE AS POSSIBLE TO 180° TO GRAVITY OUTLET.
2. THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE 6" ABOVE INVERT OF MANHOLE.
3. CORE ENTRY ONLY INTO EXISTING MANHOLES.
4. TRAP TO BE LOCATED PRIOR TO DROP INTO MANHOLE.
5. USE TWO 45° ELBOWS PAST TRAP IF ELEVATION DROP IS REQUIRED TO ENTER MANHOLE.
6. FLOW CHANNEL REQUIRED.
7. MANHOLE TO BE COATED AS SPECIFIED.

| DATE: FEB'06 | SCALE: N.T.S. | FORCE MAIN ENTERING MANHOLE | P 408 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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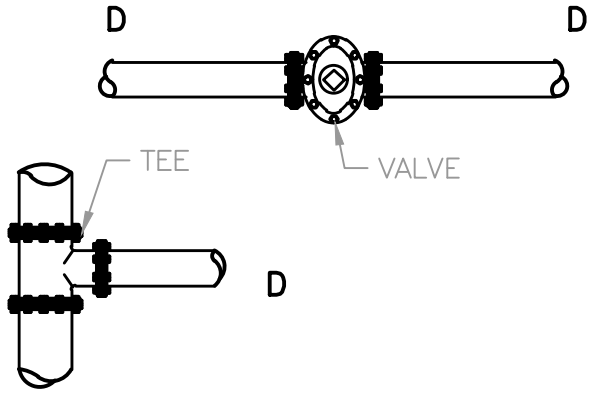


## DEAD ENDS

| | DISTANCE IN FEET | | |
|---|---|---|---|
| SIZE | A & B | C | D |
| 4" | 18 | 18 | 54 |
| 6" | 18 | 18 | 72 |
| 8" | 18 | 36 | 90 |
| 10" | 18 | 36 | 108 |
| 12" | 18 | 36 | 126 |
| 14" | 18 | 54 | 144 |
| 16" | 18 | 54 | 162 |
| 18" | 18 | 54 | 180 |
| 20" | 18 | 72 | 198 |
| 24" | 18 | 72 | 216 |

NOTE:

1. FOR PIPE SIZE OVER 24" SEE SPECIFICATIONS
2. ALL JOINTS WITHIN THE CALCULATED LENGTH PLUS THE NEXT JOINT BEYOND THE CALCULATED LENGTH MUST BE RESTRAINED.
3. IF THE DISTANCE BETWEEN FITTINGS IS LESS THAN OR EQUAL TO THE CALCUALTED RESTRAINT LENGTH, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS.

| DATE: FEB'06 | SCALE: N.T.S. | MINIMUM RESTRAINED JOINT LENGTH FOR PRESSURE MAINS | P 409 3 OF 3 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |



City of Fort Lauderdale

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# CITY OF FORT LAUDERDALE

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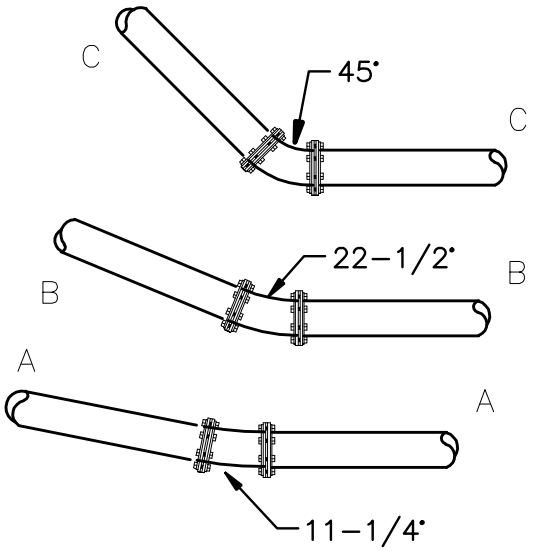


# DEFLECTIONS

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **MINIMUM RESTRAINED JOINT LENGTH FOR PRESSURE MAINS** | **P 409** 2 OF 3 |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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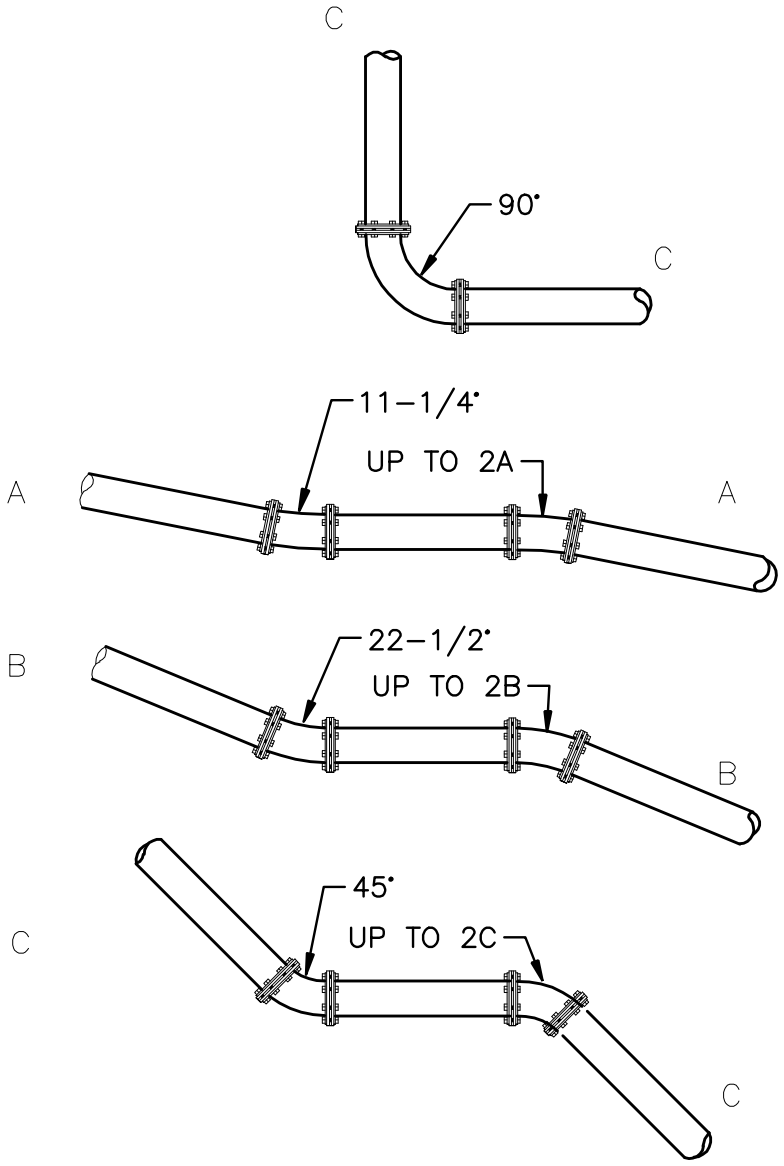


# OFFSETS

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **MINIMUM RESTRAINED JOINT LENGTH FOR PRESSURE MAINS** | **P 409** 1 OF 3 |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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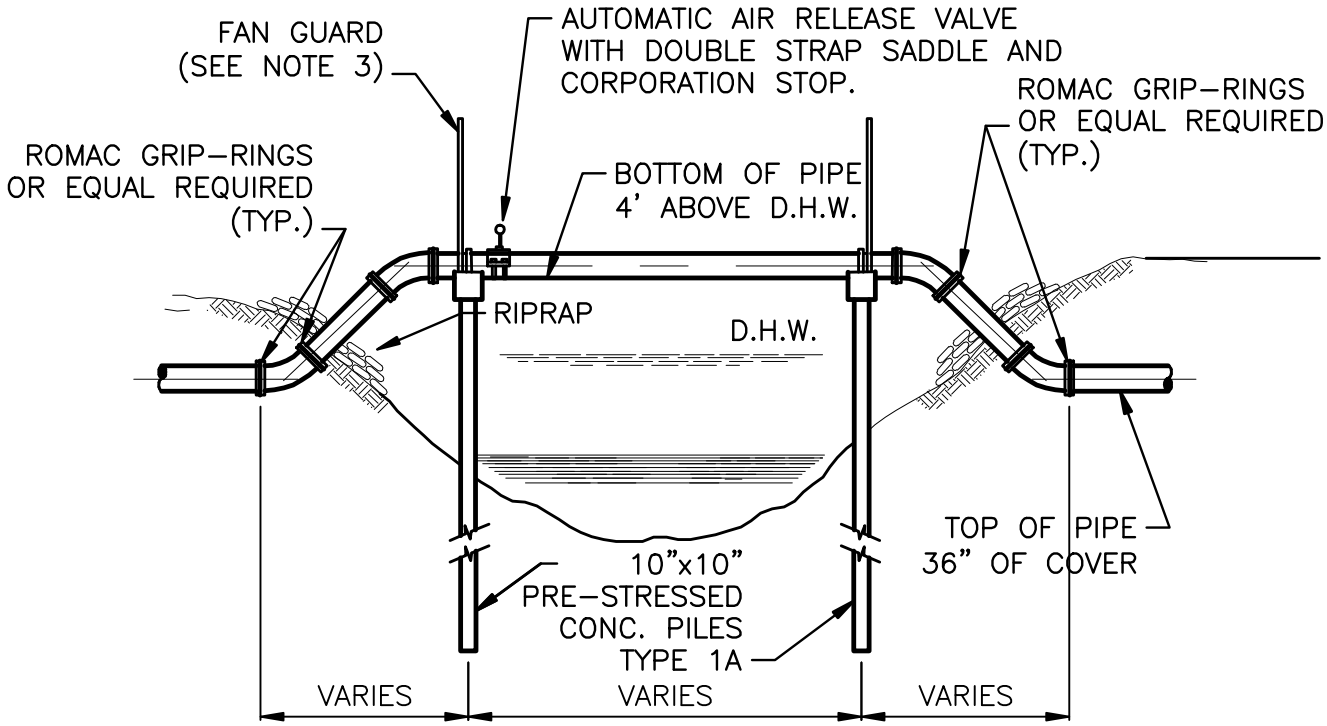


NOTES:

1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY.
3. FAN GUARDS ARE REQUIRED. SEE DETAIL.
4. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
5. ALL HARDWARE SHALL BE PAINTED WITH COAL TAR EPOXY.
6. PIPE SHALL BE CRADLED ON NEOPRENE, 1/2" THICK MINIMUM.
7. TIE–DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
8. PIPE CRADLE IN CAP SHALL CONTACT 1/2 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL).
9. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
10. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. STAINLESS STEEL (316) REQUIRED FOR ALL STRAPS, SADDLES, FLANGE BOLTS, AND OTHER HARDWARE FOR INSTALLATIONS OVER BRACKISH OR MARINE WATERS (ANTI–GALL COMPOUND TO BE USED WHEN ASSEMBLING STAINLESS STEEL NUTS AND BOLTS).

| DATE: FEB'08 | SCALE: N.T.S. | **TYPICAL UTILITIES CANAL CROSSING** | **P 410** |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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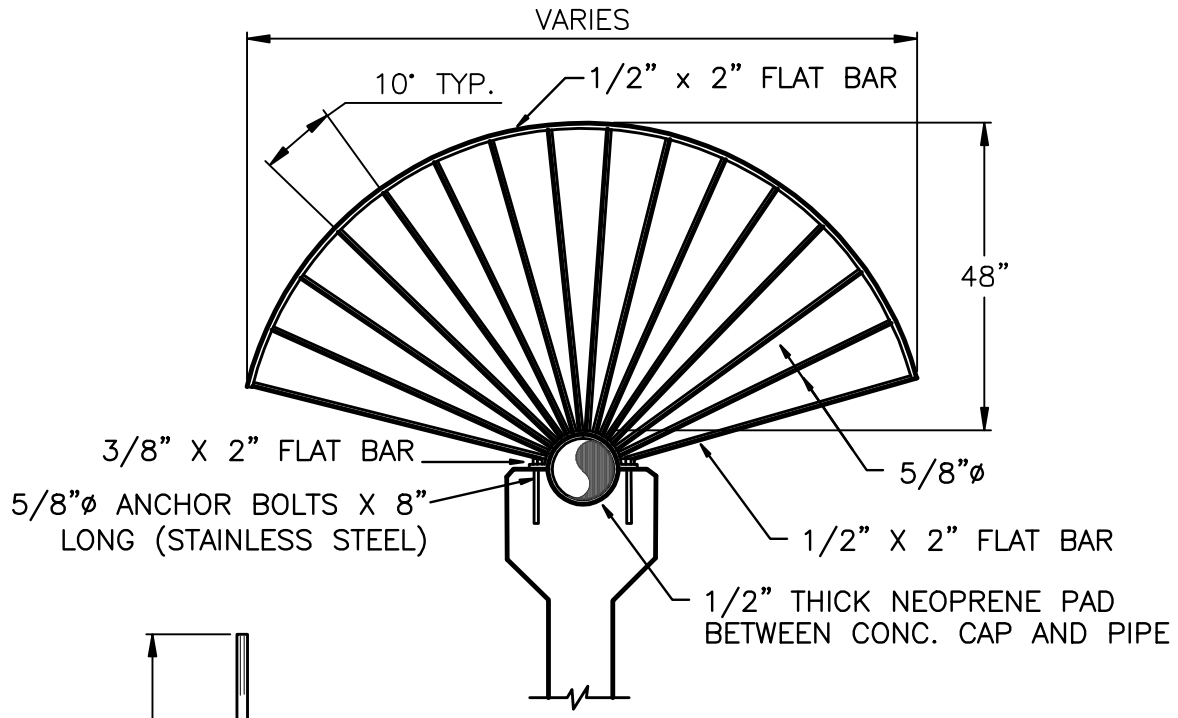


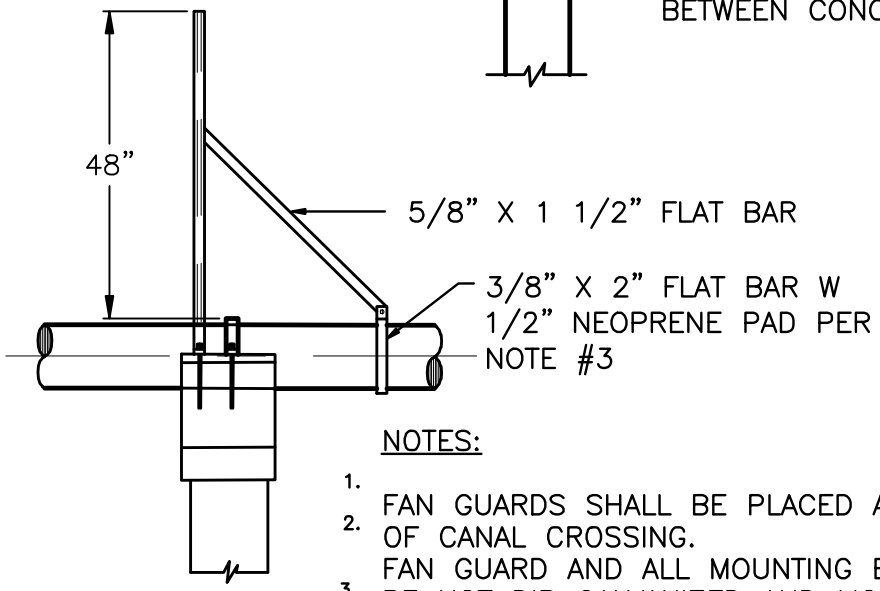


NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. FAN GUARD AND ALL MOUNTING BRACKETS TO BE HOT DIP GALVANIZED AND MOUNTING HARDWARE TO BE STAINLESS STEEL.
3. 1/2" THICK NEOPRENE PAD TO INSULATE PIPE FROM CONTACT WITH ALL MOUNTING HARDWARE, FAN GUARD HARDWARE, AND CONCRETE SURFACES.

| DATE: FEB'08 | SCALE: N.T.S. | TYPICAL FAN GUARD | P 411 |
|---|---|---|---|
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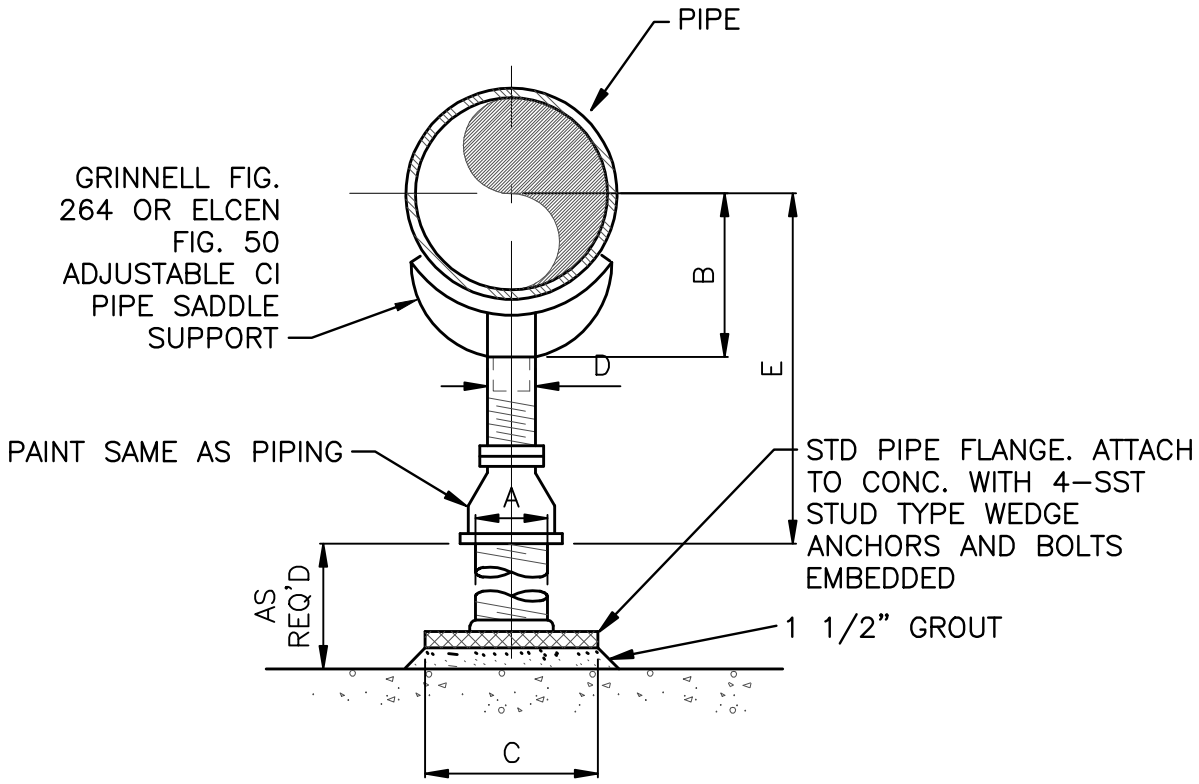


NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO GRINNELL FIGURE 167 OR ELCEN FIGURE 219, WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE.

| DIMENSION TABLE | | | | | | |
|---|---|---|---|---|---|---|
| PIPE SIZE | A | B | C | D | E | |
| | | | | | MIN. | MAX. |
| 4" | 3" | 4–1/4" | 9" | 2–1/2" | 9–1/4" | 14" |
| 6" | 3" | 5–1/2" | 9" | 2–1/2" | 10–1/2" | 15–1/4" |
| 8" | 3" | 6–7/8" | 9" | 2–1/2" | 11–3/4" | 16–1/2" |
| 10" | 3" | 8–1/2" | 9" | 2–1/2" | 13–1/2" | 18–1/4" |
| 12" | 3" | 9–15/16" | 9" | 2–1/2" | 15" | 19–3/4" |

| DATE: FEB'06 | SCALE: N.T.S. | PIPE SUPPORT | PS 500 |
|---|---|---|---|
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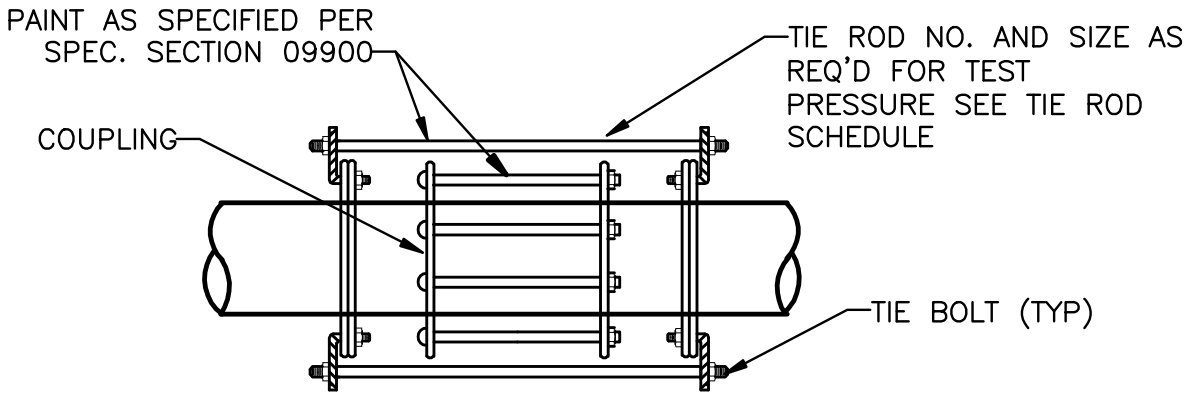
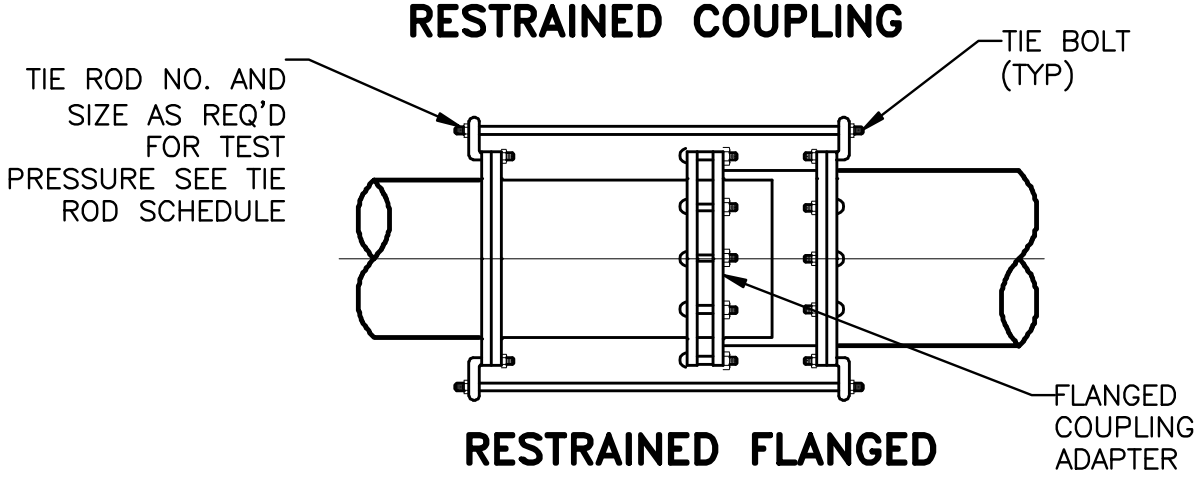



**RESTRAINED COUPLING**




**RESTRAINED FLANGED COUPLING ADAPTER**

TIE ROD SCHEDULE

| TEST PRESSURE | | 25 PSI | | 50 PSI | | 100 PSI | | 150 PSI | | 225 PSI | | 375 PSI | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE DIAMETER (IN.) | MINIMUM PIPE WALL THICKNESS (IN.) * | TIE RODS | | TIE RODS | | TIE RODS | | TIE RODS | | TIE RODS | | TIE RODS | |
| | | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD |
| 6 | 3/16 | — | — | — | — | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 |
| 8 | 3/16 | — | — | — | — | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 |
| 10 | 3/16 | — | — | — | — | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 | 7/8 | 2 |
| 12 | 3/16 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 | 7/8 | 4 |

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **RESTRAINED COUPLING DETAILS** | **PS 501** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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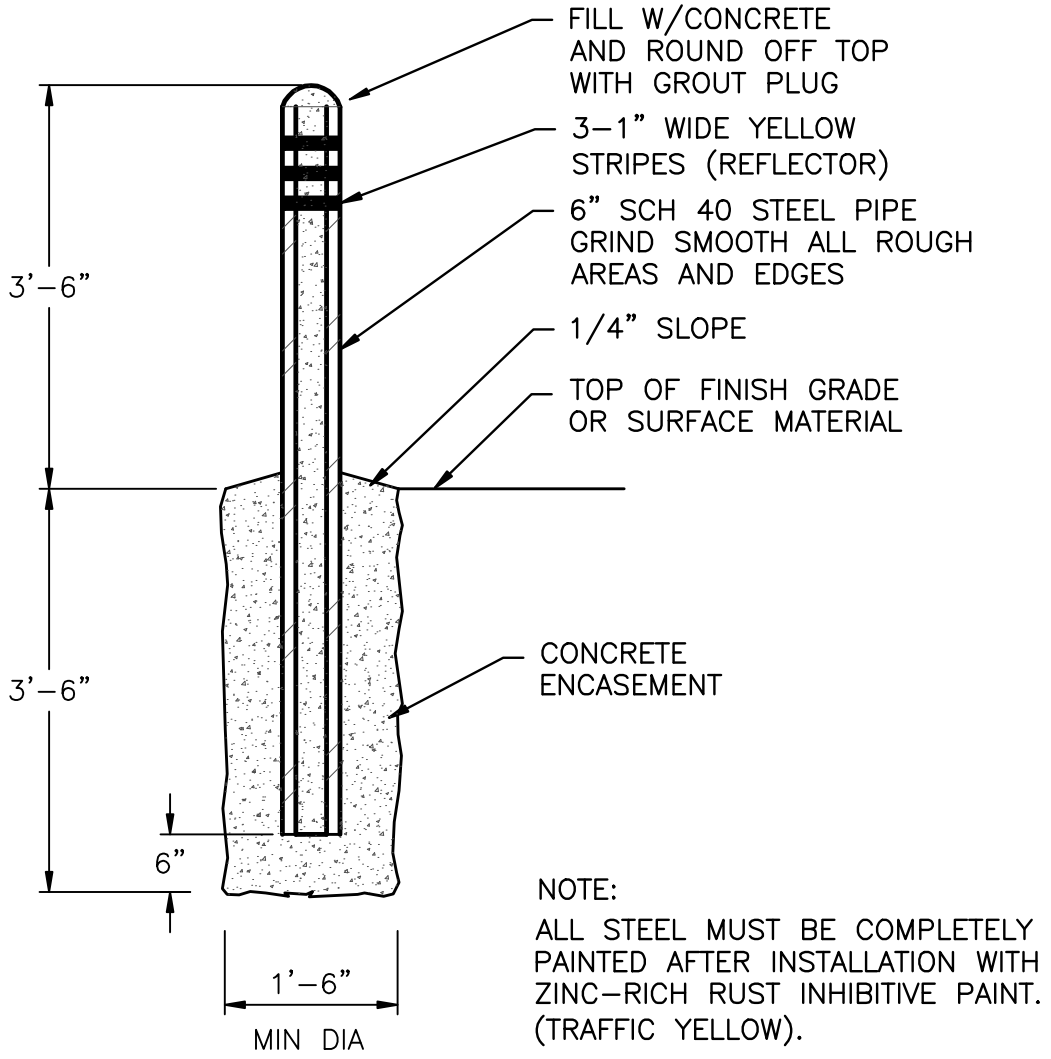


NOTE:

ALL STEEL MUST BE COMPLETELY PAINTED AFTER INSTALLATION WITH ZINC–RICH RUST INHIBITIVE PAINT. (TRAFFIC YELLOW).

| DATE: FEB'06 | SCALE: N.T.S. | GUARD POST | PS 502 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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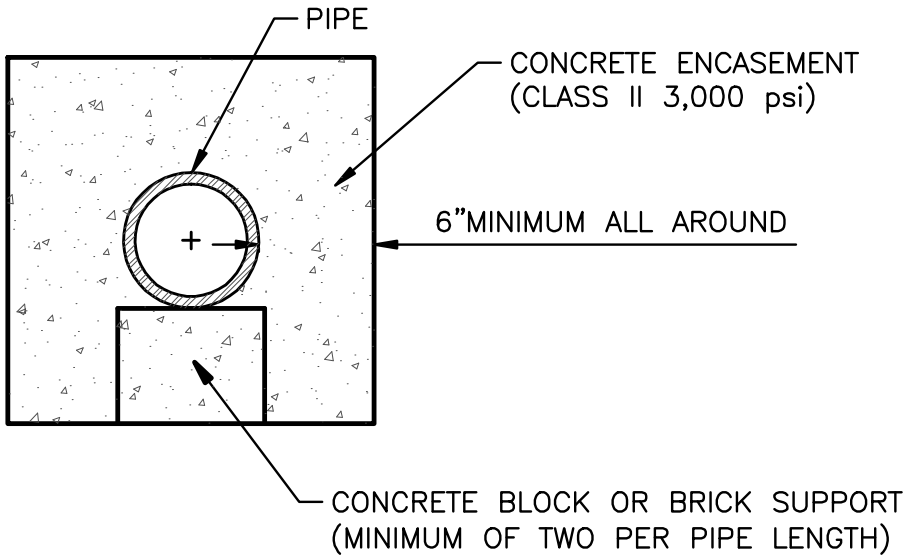


NOTES:

1. WHERE MINIMUM COVER, 36", IS NOT AVAILABLE ENCASEMENT WILL BE REQUIRED.
2. ALL CONCRETE ENCASEMENTS MUST BE FORMED AND INSPECTED BY THE CITY'S INSPECTOR PRIOR TO PLACING CONCRETE AND BACKFILLING.
3. WRAP PIPE IN VISQUEEN PRIOR TO POURING ENCASEMENT.
4. AT CROSSINGS, ENCASEMENT SHALL EXTEND TEN FEET (10') ON EITHER SIDE OF CROSSING.
5. BEGINNING AND ENDING OF ENCASEMENTS SHALL NOT BE MORE THAN 6" FROM A PIPE JOINT.

| DATE: FEB'06 | SCALE: N.T.S. | PIPE CONCRETE ENCASEMENT | PS 503 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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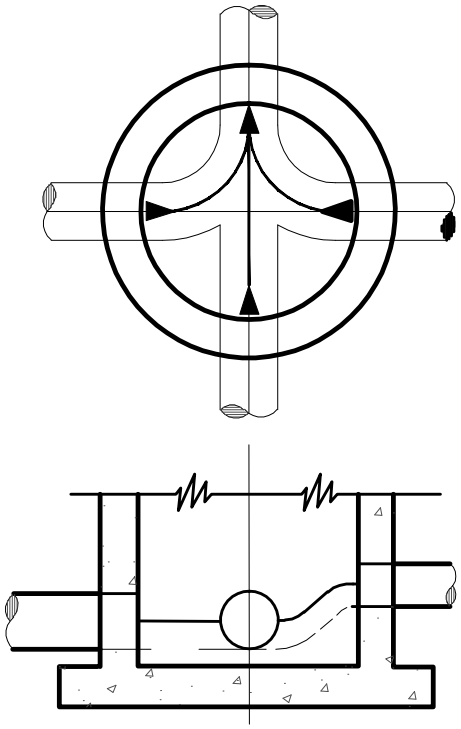

NOTES:

1. ALL INVERT CHANNELS ARE TO BE CONSTRUCTED FOR SMOOTH FLOW WITHOUT OBSTRUCTION.
2. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
3. SERVICE LATERALS SHALL NOT ENTER MANHOLES UNLESS SPECIFIED ON PLANS AND THEN MUST BE TREATED AS MAINS. (ELEVATIONS SHOWN, PRECAST HOLE, FLOW CHANNEL)
4. BRICK RUBBLE PERMITTED AS FLOW CHANNEL BUILDUP.
5. SIDEWALLS OF FLOW CHANNEL SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.
6. NO INSIDE DROP LARGER THAN 6" SHALL BE ALLOWED WITH 3 OR 4 INVERTS AND MANHOLES WITH A CHANGE OF DIRECTION OF FLOW OF MORE THAN 45 DEGREES.

| DATE: FEB'06 | SCALE: N.T.S. | **INVERT FLOW CHANNELS** | **S 202** |
|---|---|---|---|
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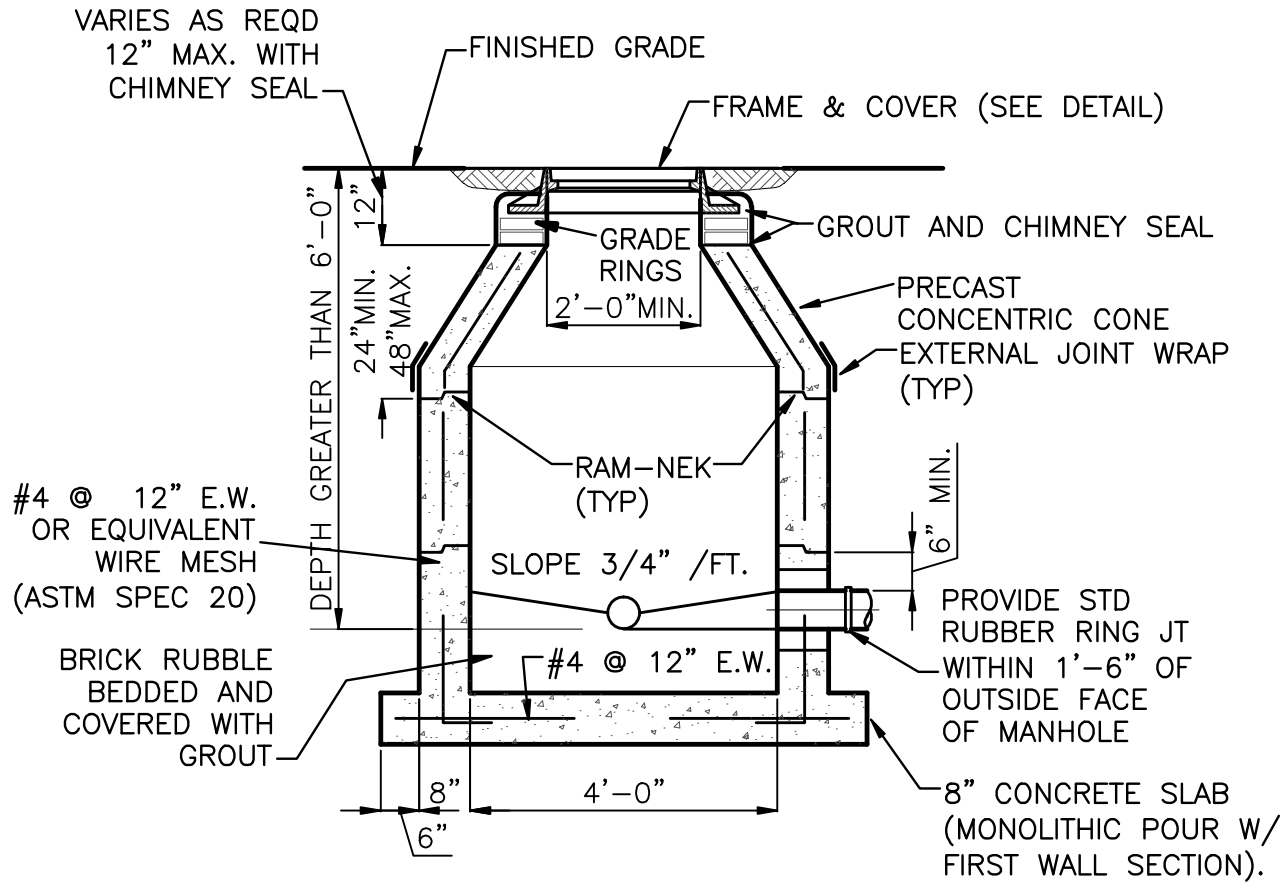


NOTES:

1. PRECAST CONCRETE TYPE II 4000 P.S.I.
2. "RAM-NEK" OR EQUAL AT ALL RISER JOINTS (1/2" THICK WITH THE WIDTH AT LEAST 1/2 THE WALL THICKNESS).
3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
4. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
5. LIFT HOLES ARE PERMITTED.

| DATE: FEB'06 | SCALE: N.T.S. | STANDARD MANHOLE | S 203 1 OF 2 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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NOTES (CONT'D)

6. ALL PIPE HOLES SHALL BE PRECAST OR CORE DRILLED.

   A. FOR PVC PIPE ENTERING MANHOLE WITH PRECAST HOLES USE THE APPROVED NON-ASBESTOS PVC-MANHOLE ADAPTER OR PRECAST FLEXIBLE MANHOLE SLEEVE FOR THE APPROPRIATE PIPE DIAMETER AND DIMENSION RATIO. THE ADAPTER SHALL NOT EXTEND MORE THAN 1" INTO THE MANHOLE. DOUBLE BANDING IS REQUIRED FOR FLEXIBLE MANHOLE SLEEVE.

   B. CONNECTION TO A MANHOLE WITH A CORE DRILLED HOLE SHALL BE MADE USING A 5' MIN. DUCTILE IRON PIPE SECTION (EPOXY LINED) OR THE APPROVED PVC-MANHOLE ADAPTER.

7. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND
8. NOT CONSTRUCTED TO EXCEED 2.0 FEET. MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE.
11. MANHOLES TO BE PAINTED INSIDE AND OUTSIDE WITH 2 COATS OF AN APPROVED PROTECTIVE COATING. (ONE COAT RED, ONE COAT BLACK) MIN. 8-10 MILS D.F.T. PER COAT.
12. MANHOLE SHALL BE SET PLUMB TO LINE AND GRADE.

| DATE: FEB'06 | SCALE: N.T.S. | STANDARD MANHOLE | S 203 2 OF 2 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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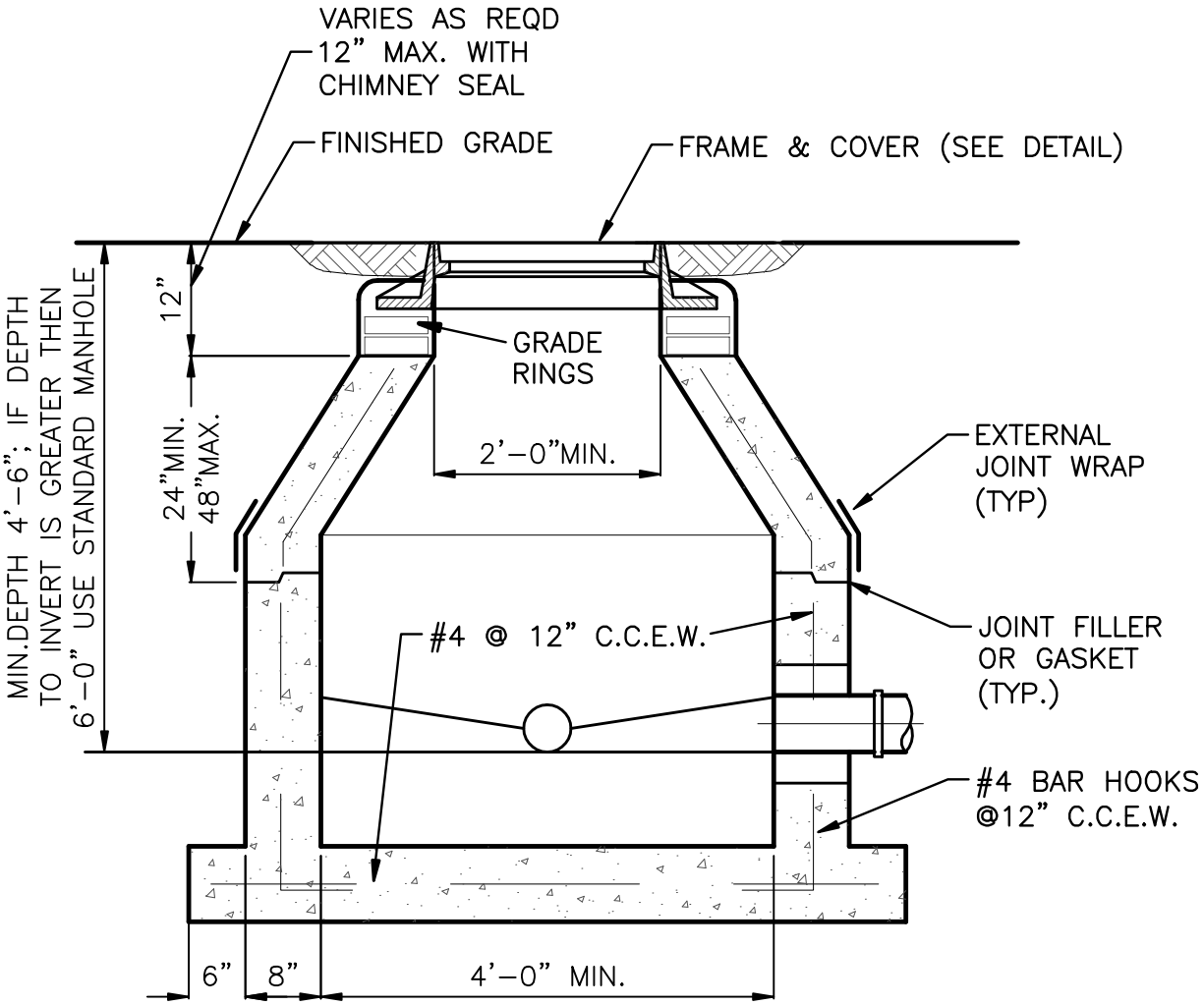


NOTE:

ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **SHALLOW MANHOLE** | **S 204** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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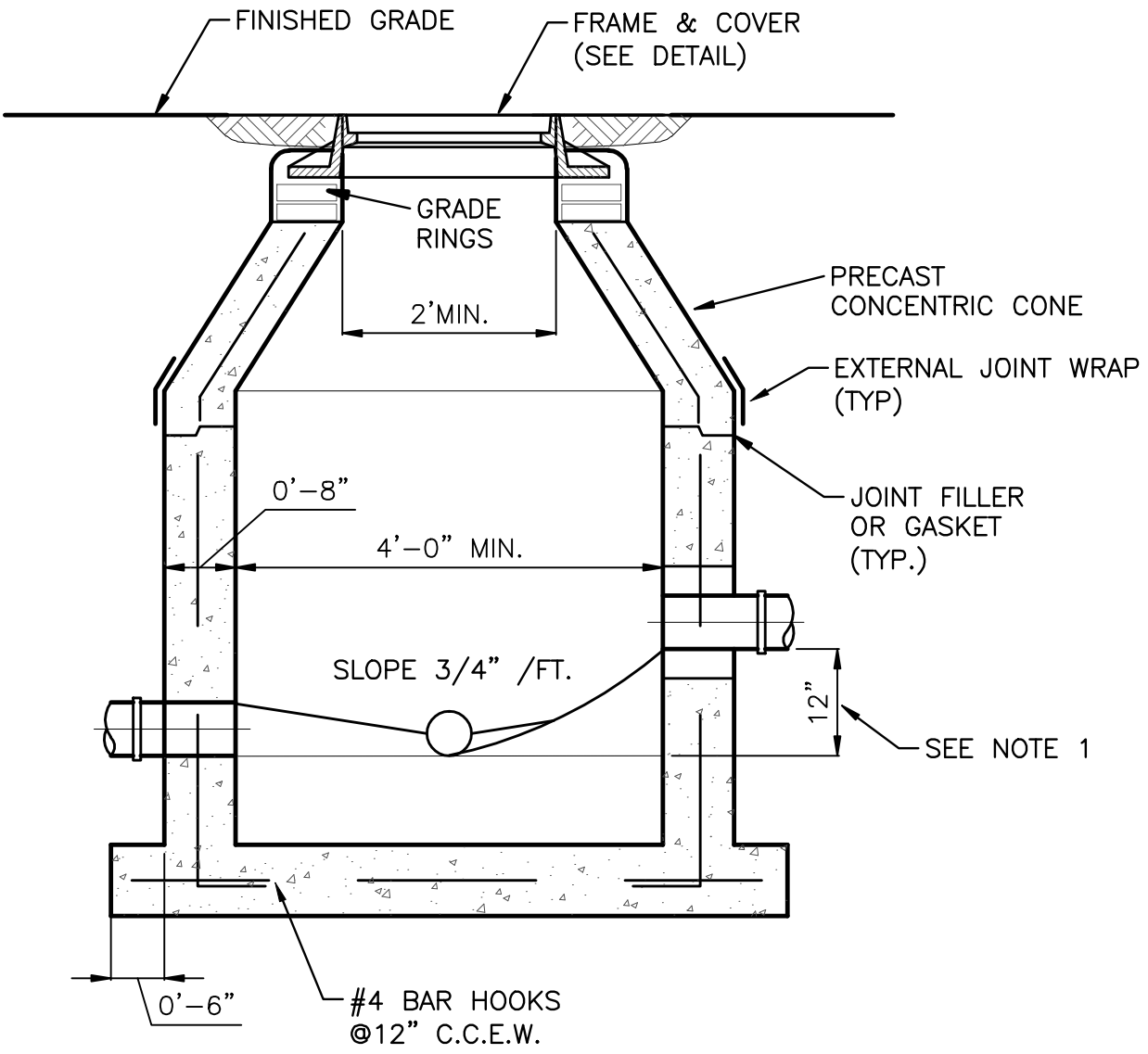


NOTES:

1. INSIDE DROP TO BE USED WHEN DROP IS GREATER THAN 6 INCHES AND LESS THAN 24 INCHES AND/OR FOR LATERAL CONNECTIONS.
2. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO FLOW STREAM.
3. CONSTRUCTION OF DROP SHALL PROVIDE AN OVERSIZED SLAB TO EXTEND UNDER THE DROP CONNECTION.
4. MINIMUM PIPE SIZE FOR DROP IS 8".
5. SEE "STANDARD MANHOLE" DETAIL FOR ADDITIONAL REQUIREMENTS.

| DATE: FEB'06 | SCALE: N.T.S. | **DROP CONNECTION PRECAST MANHOLE TYPE A** | **S 205** |
|---|---|---|---|
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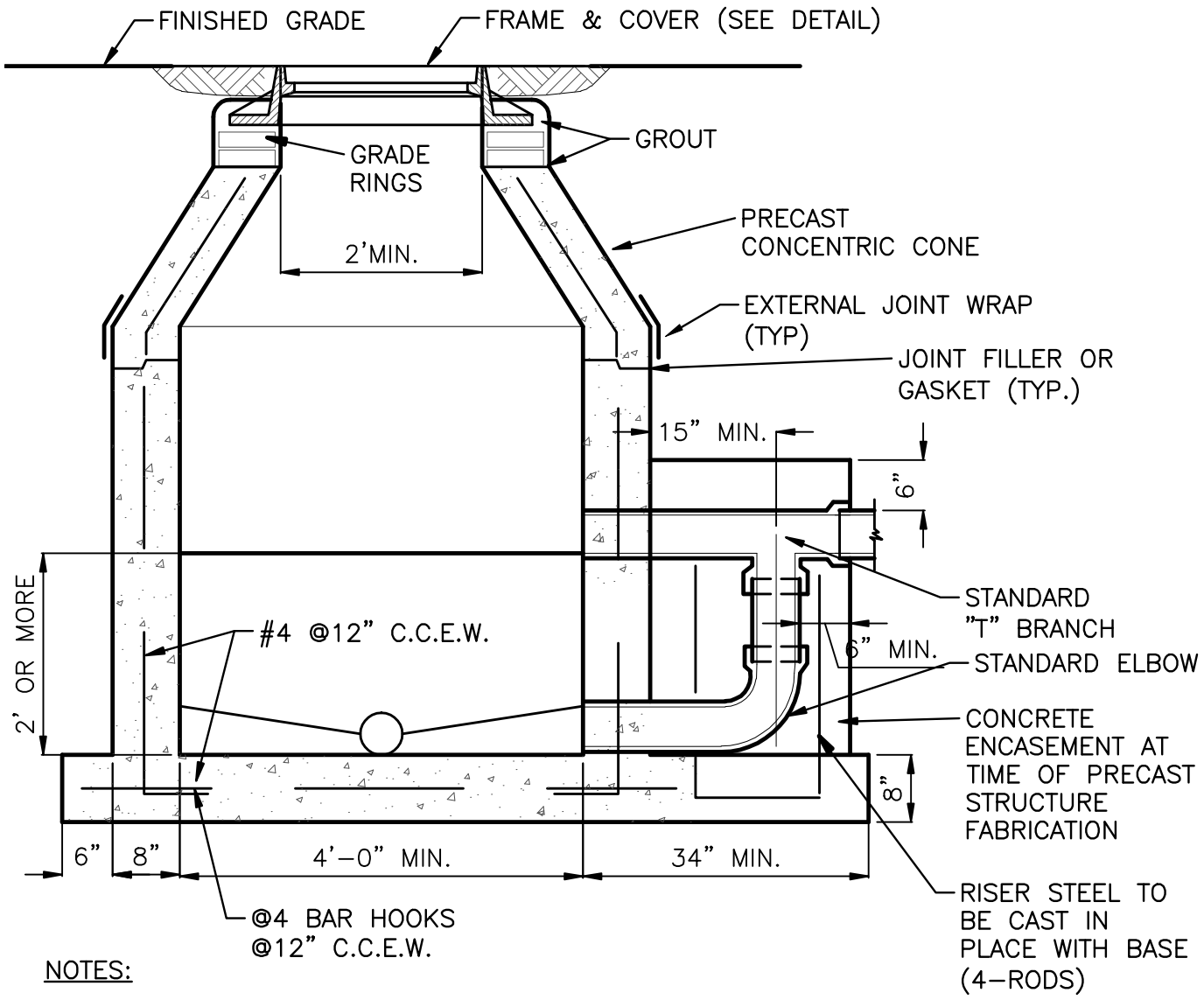


NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.0 FOOT DROP.
3. SOLVENT TYPE JOINT PVC FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY.
4. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY AND BE CONSTRUCTED MONOLITHICALLY WITH THE BASE SECTION.
5. BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN DROP ENCASEMENT.

| DATE: FEB'06 | SCALE: N.T.S. | OUTSIDE DROP CONNECTION PRECAST MANHOLE TYPE B | S 206 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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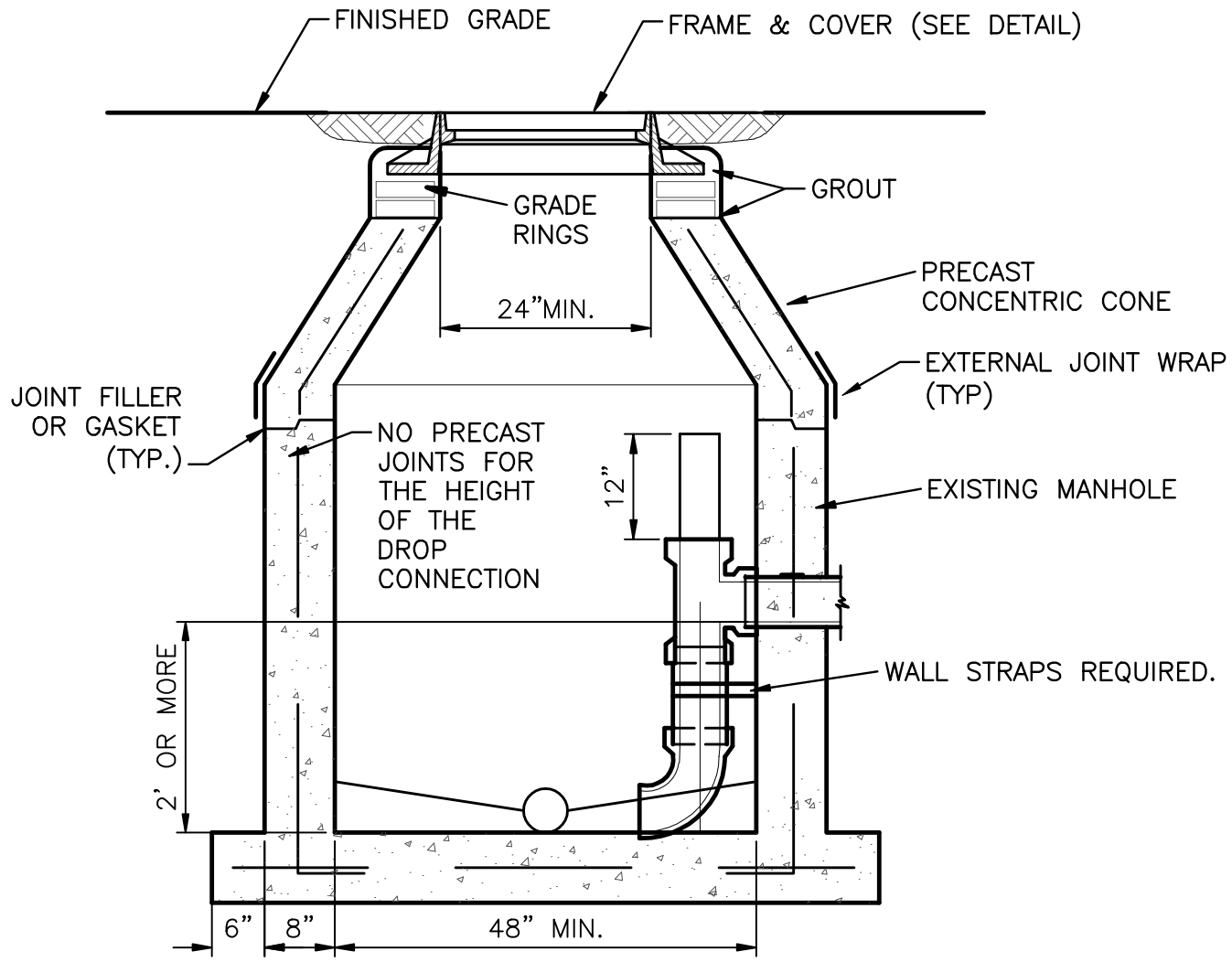


NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. INSIDE DROP CONNECTION TO BE USED ONLY FOR A SINGLE DROP CONNECTION TO AN EXISTING MANHOLE.
3. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
4. SOLVENT TYPE JOINT PVC FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY.

| DATE: FEB'06 | SCALE: N.T.S. | **INSIDE DROP CONNECTION EXISTING MANHOLE C** | **S 207** |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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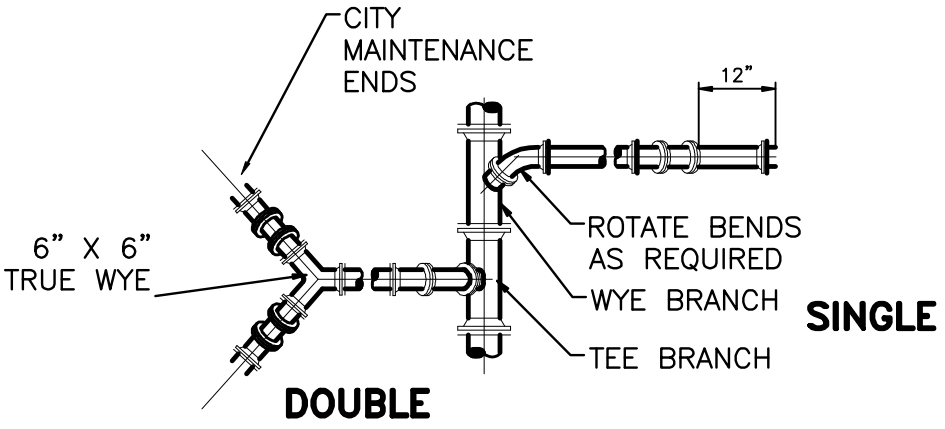


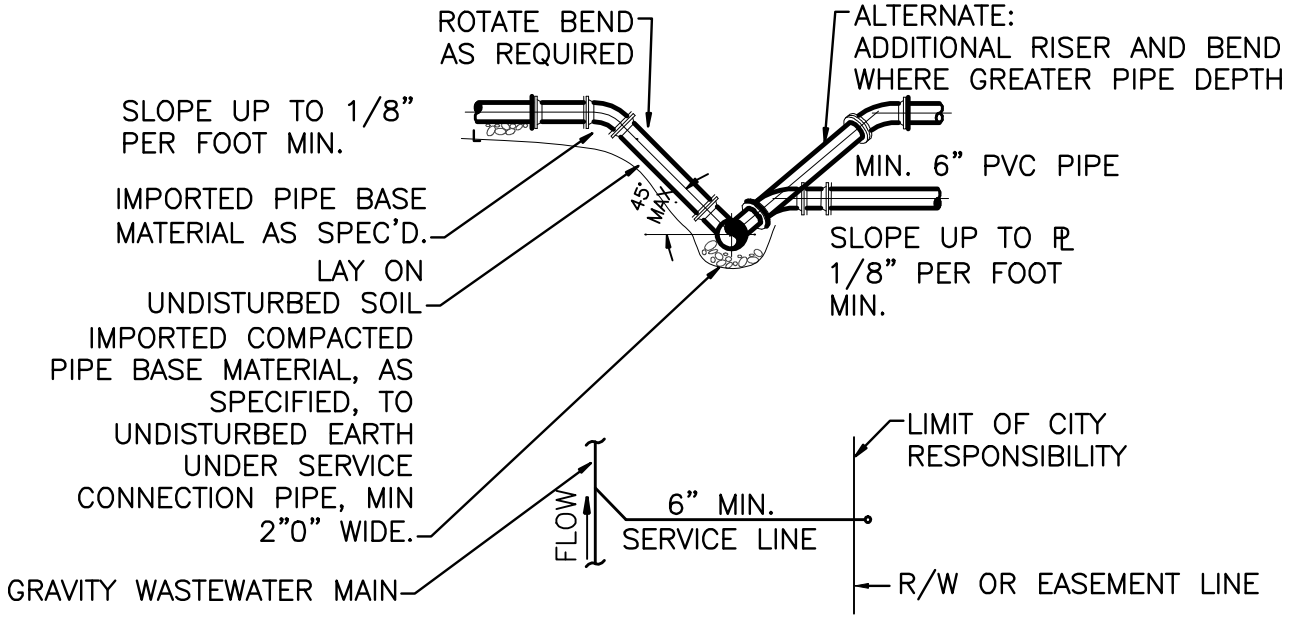


NOTES:

1. WASTEWATER MAIN WYE BRANCH TO MATCH MAIN PIPE MATERIAL.
2. NO 90° BENDS SHALL BE USED FOR WASTEWATER SERVICE AND CLEANOUT INSTALLATIONS.
3. SERVICE LATERALS SHALL TERMINATE AT 12" INSIDE THE PROPERTY LINE AT A DEPTH OF 3 FEET EXCEPT WHERE A DEEPER INVERT IS REQUIRED BY EXISTING BUILDING CONDITIONS.

| DATE: FEB'06 | SCALE: N.T.S. | TYPICAL WASTEWATER SERVICE CONNECTION | S 208 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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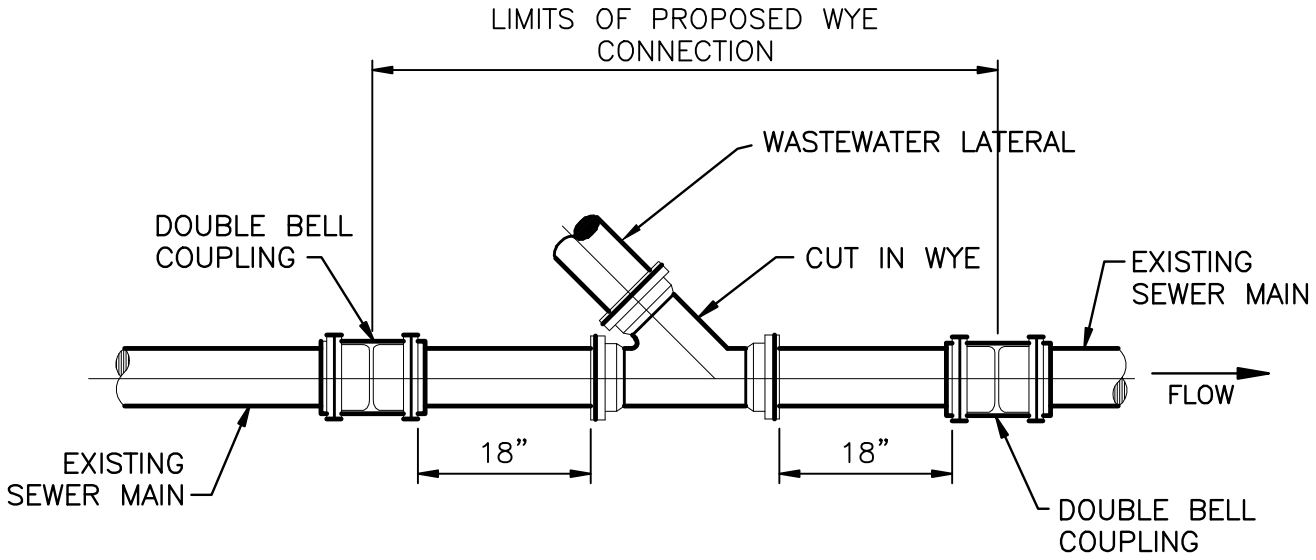


| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **NEW LATERAL ON EXISTING GRAVITY WASTEWATER MAIN** | **S 210** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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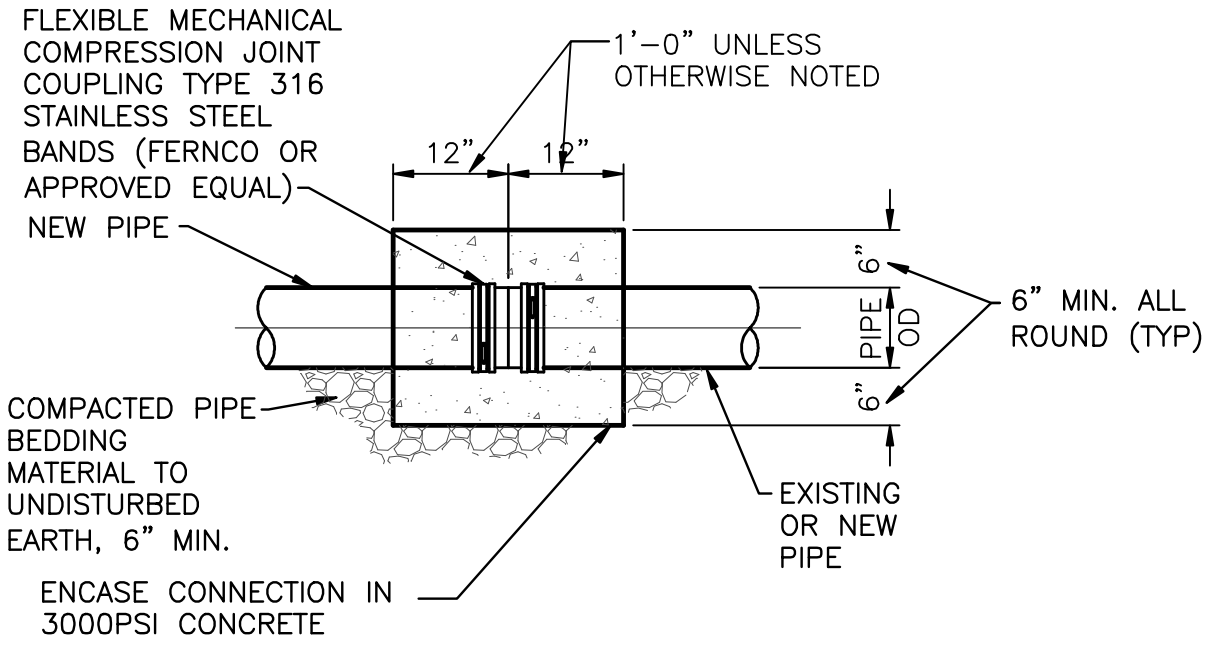


| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **JOINT OF DESSIMILAR GRAVITY SEWER PIPES** | **S 211** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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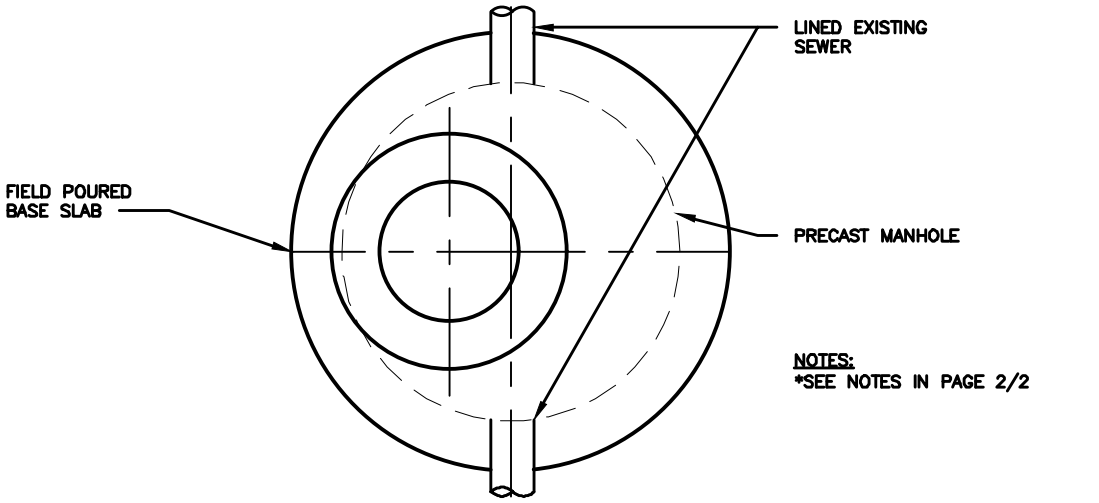
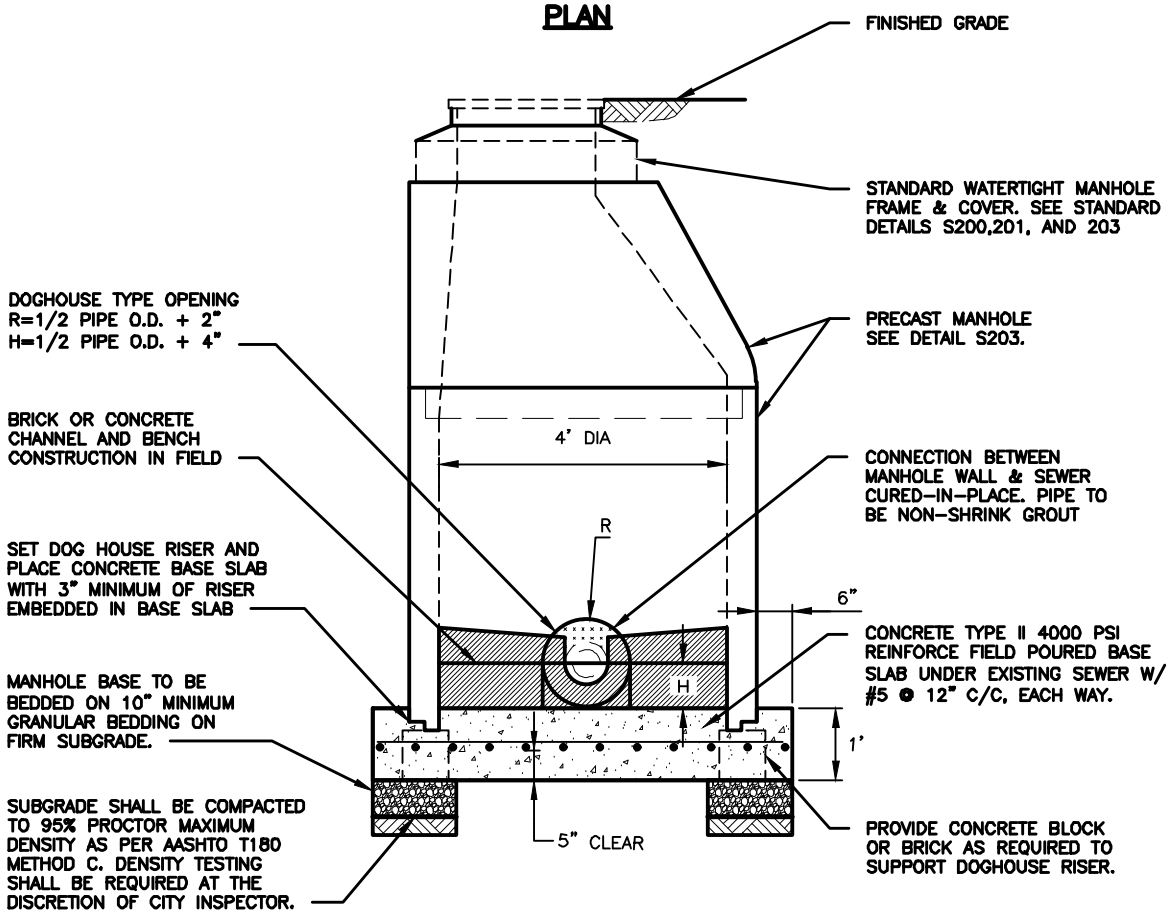



NOTES:
*SEE NOTES IN PAGE 2/2

**PLAN**




**ELEVATION**

| | | | |
|---|---|---|---|
| DATE: July 2018<br>REVISED: July 2018 | SCALE: N.T.S.<br>DRAWN BY: B.H. | PRECAST CONCRETE MANHOLE BUILT OVER EXISTING CURED IN PLACE LINED SEWER PIPE | **S**<br>212<br>1 of 2 |

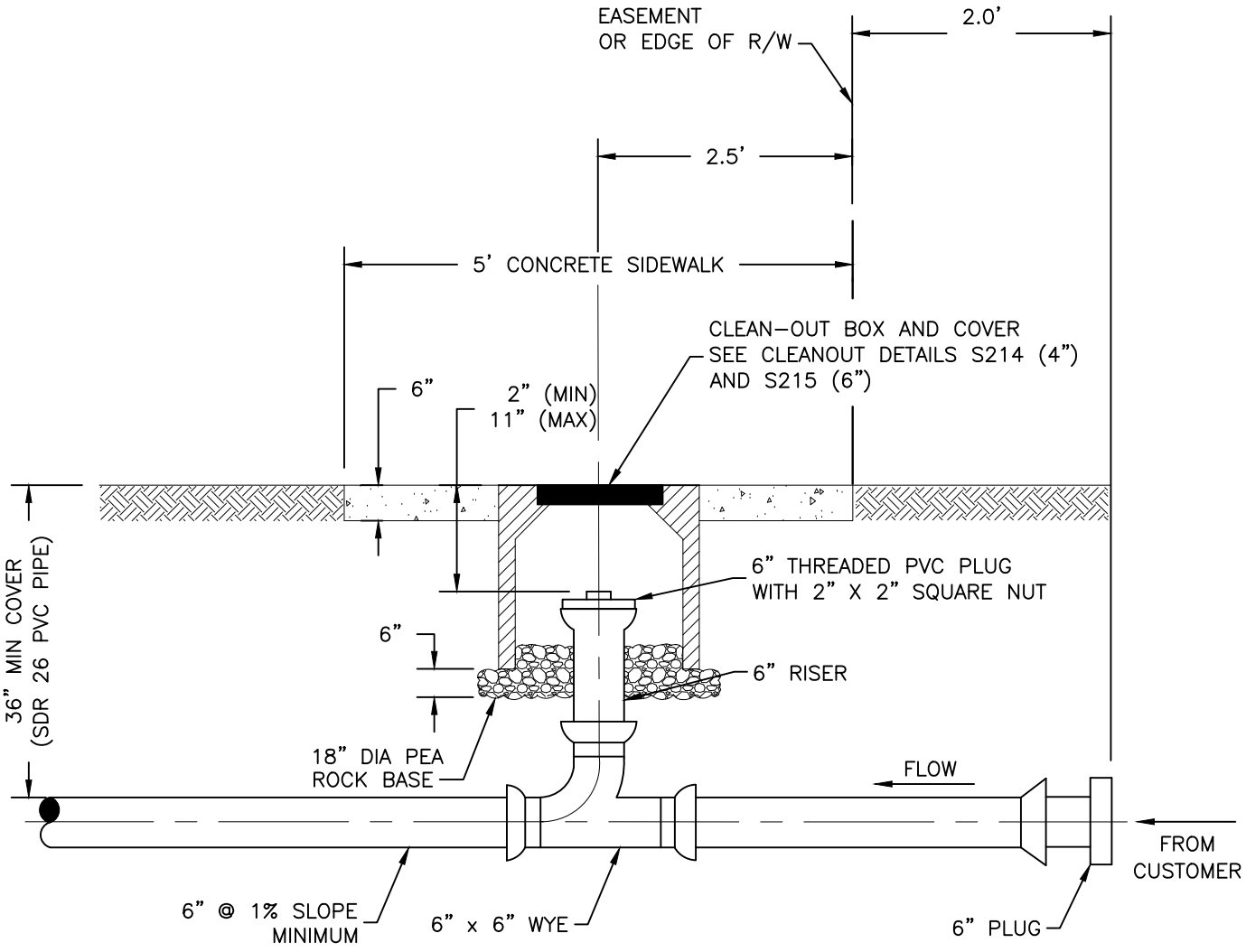


City of Fort Lauderdale

7/17/2019 2:49 PM

# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER




1. THE CLEAN OUT SHALL BE INSTALLED IN THE MIDDLE OF THE SIDEWALK. THIS DIMENSION WILL VARY DEPENDING UPON THE WIDTH OF THE SIDEWALK. 2.5' APPLIES TO 5' SIDEWALK WIDTH. IF SIDEWALKS DO NOT EXIST, THE CLEAN OUT SHALL BE INSTALLED 2.5' FROM THE RIGHT OF WAY LINE.
2. A NEW SECTION OF SIDEWALK SHALL BE POURED AROUND THE CLEAN–OUT BOX WHEN WORKING IN AN AREA WITH EXISTING SIDEWALKS.
3. IN GRASS AREA USE 24"x24" OR 24" DIAMETER CONCRETE COLLAR. SEE DETAILS S214 AND S215 FOR 4 AND 6 INCH CLEAN–OUT.

| DATE: Sep–18 | SCALE: NTS | SEWER SERVICE CONNECTION AT PROPERTY LINE OR EASEMENT LINE (PROFILE) | S 213 |
|---|---|---|---|
| REVISED: Sep–18 | DRAWN BY: B.H. | | |



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7/17/2019 2:49 PM

# CITY OF FORT LAUDERDALE

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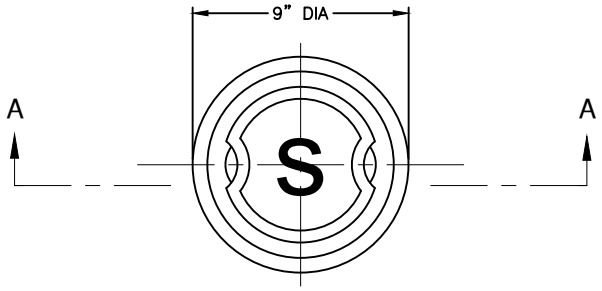
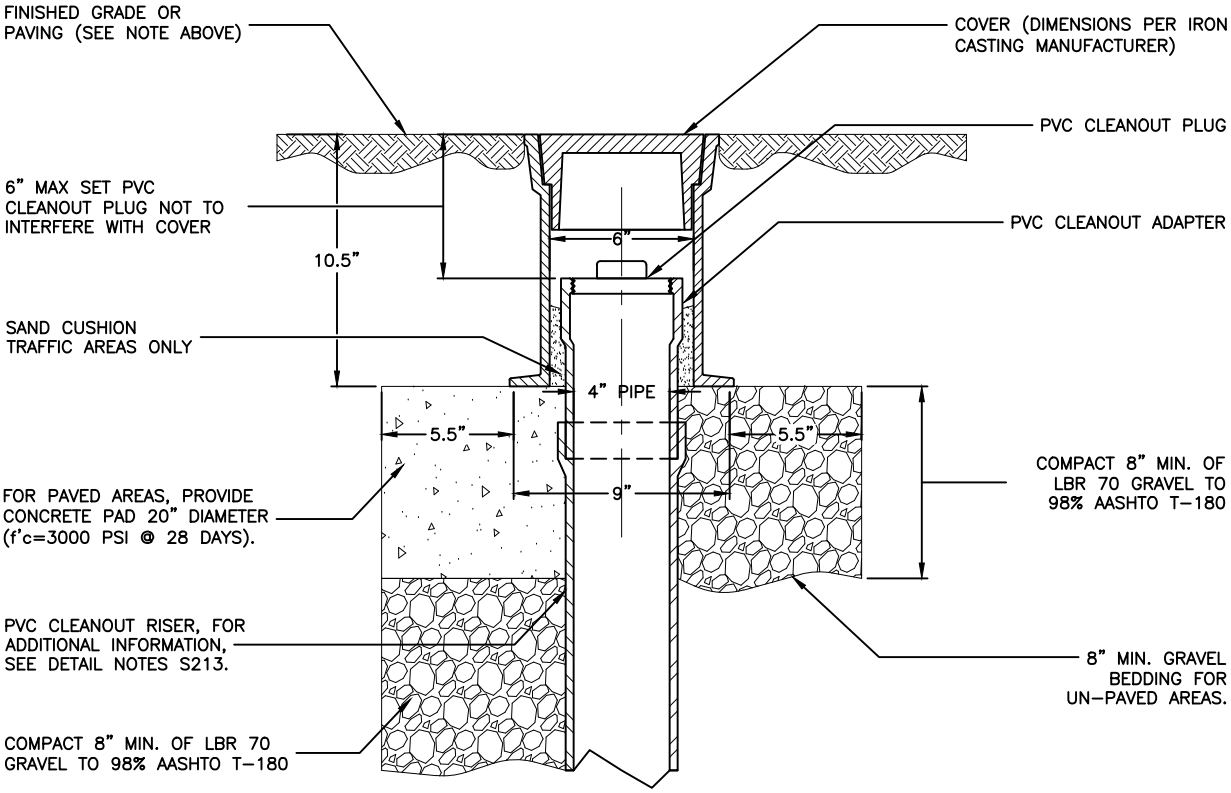
NOTES:
IN VEHICULAR TRAFFIC AREAS NOT PAVED, PROVIDE 2'X2'X10-1/2"(H) SQUARE CONCRETE ENCASEMENT (f'c=3000 PSI @ 28 DAYS) AROUND THE FRAME.




PLAN

EXPANSION PLUG NOTES:

1. EXPANSION PLUG SHALL NOT INTERFERE WITH LID.
2. PLUG FLANGE SHALL BE LARGER THAN PIPE I.D.
3. THREADED COMPONENTS SHALL BE FLATTENED OR STAKED TO PREVENT DISASSEMBLY.




| DATE: Sep-18 | SCALE: 1-1/2"=1'-0" | CLEAN-OUT COVER ASSEMBLY FOR 4-INCH CLEAN-OUTS | S 214 |
|---|---|---|---|
| REVISED: Sep-18 | DRAWN BY: B.H. | | |



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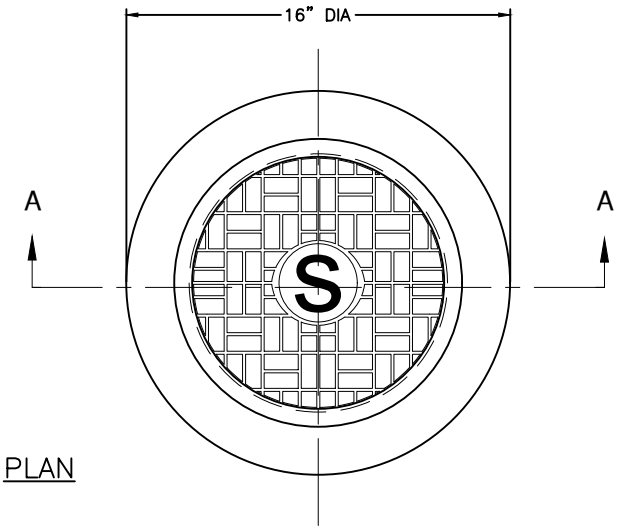
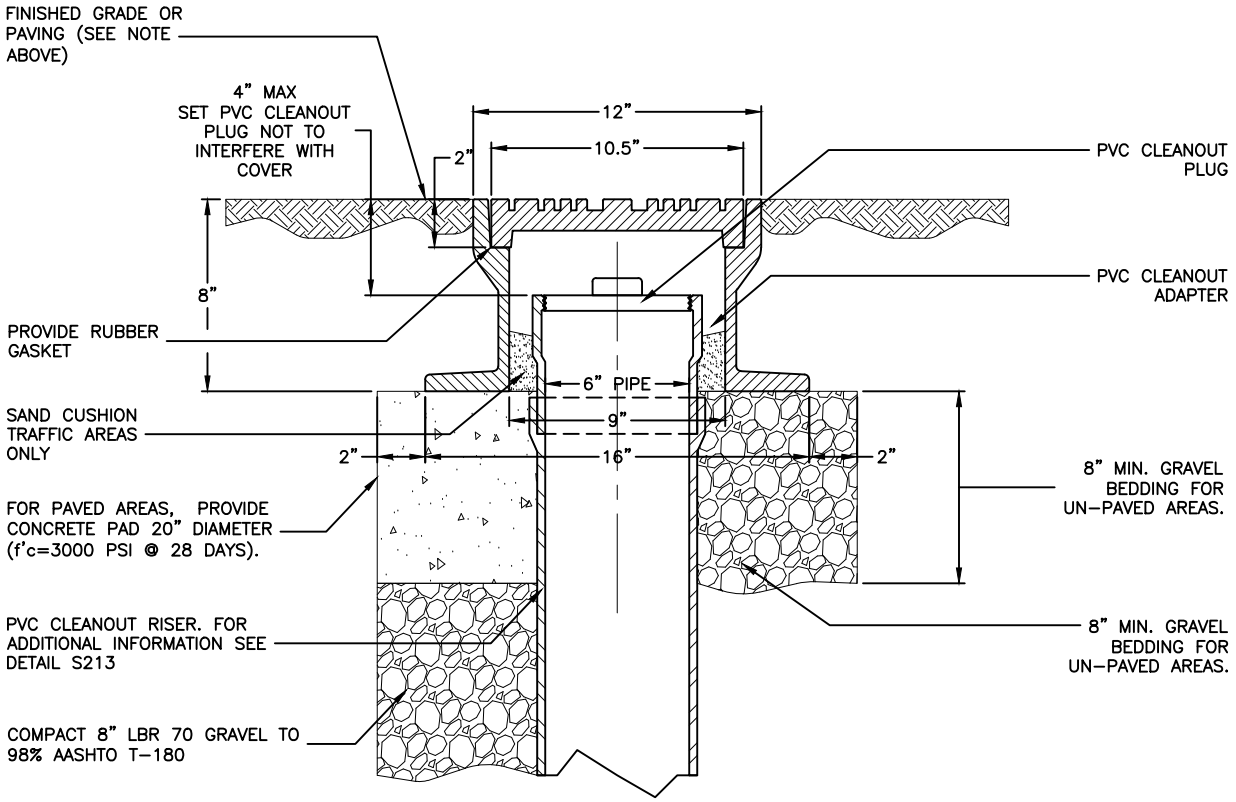
# CITY OF FORT LAUDERDALE

## OFFICE OF THE CITY ENGINEER

NOTES: IN VEHICULAR TRAFFIC AREAS NOT PAVED, PROVIDE 2'X2'X10 ½" (H) SQUARE CONCRETE ENCASEMENT (f'c=3000 PSI @ 28 DAYS) AROUND THE FRAME.




PLAN




SECTION A–A

| DATE: Sep–18 | SCALE: 1–1/2"=1'–0" | CLEAN-OUT COVER ASSEMBLY FOR 6-INCH CLEAN-OUTS | S 215 |
|---|---|---|---|
| REVISED: Sep–18 | DRAWN BY: B.H. | | |



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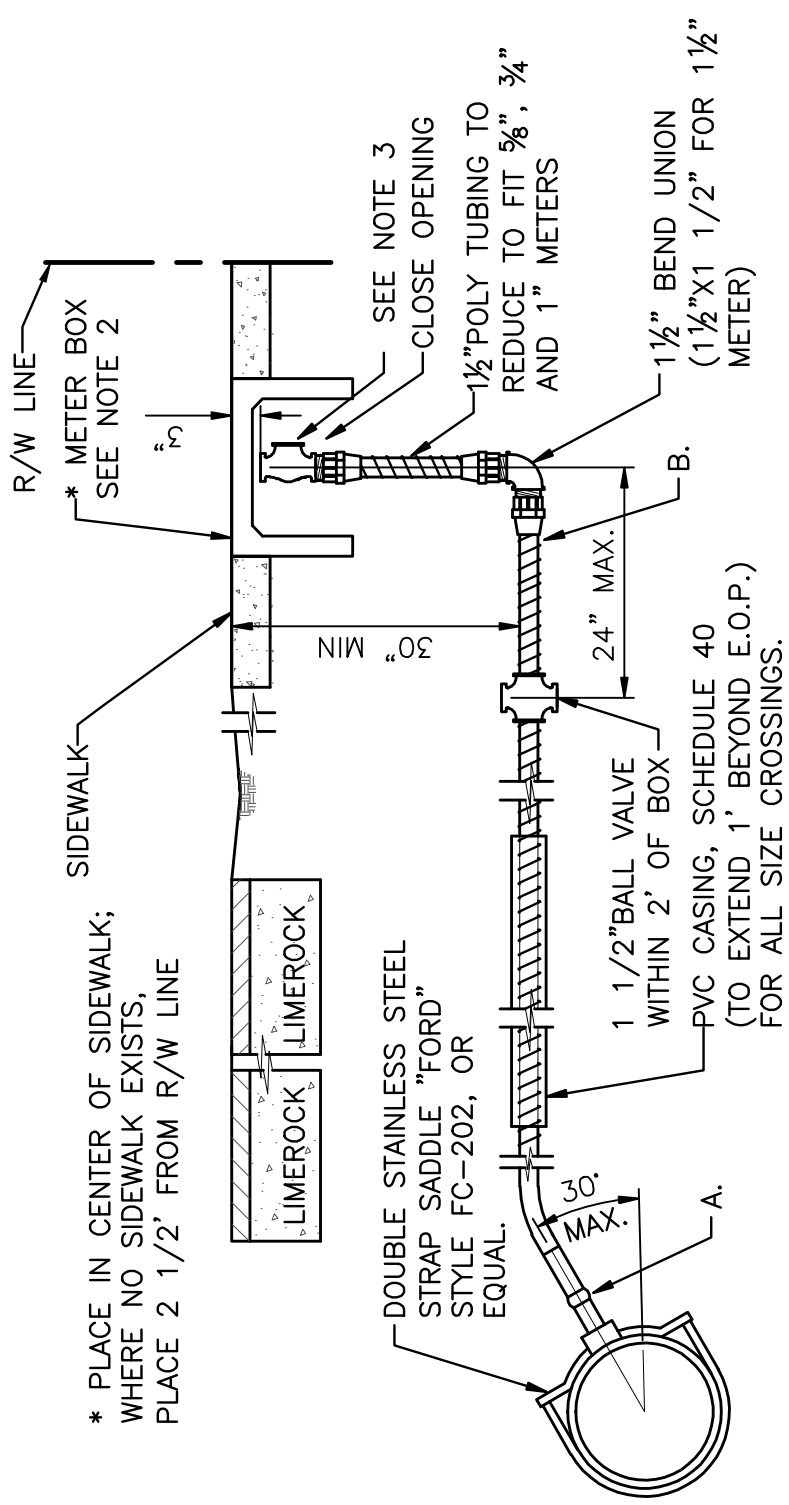


| | | | |
|---|---|---|---|
| DATE: FEB.'09 | SCALE: N.T.S. | TYPICAL WATER SERVICE INSTALLATION | W 300 1 OF 2 |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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A. CORPORATION STOP, BRASS AWWA I.P. THREAD AT INLET AND CONDUCTIVE COMPRESSION CONNECTION, FOR CTS O.D. TUBING "MUELLER" B–25028, INCLUDING THE STAINLESS STEEL LINER, "MUELLER" 506141 (FOR 2–INCH), 506139 (FOR 1 –INCH), 504385 (FOR 1–INCH), OR APPROVED EQUAL.

B. POLYETHYLENE WATER SERVICE PIPE (3408 ASTM 2737 SDR9) WITH #12 GAUGE COATED COPPER WIRE SINGLE–STRAND WRAPPED AROUND POLYETHYLENE SERVICE.

NOTE:

1. GROUND KEY ANGLE METER STOP,CONDUCTIVE COMPRESSION FOR CTS O.D. TUBING, X METER FLANGE 180° TURN CHECK–LOCK WING "MUELLER" H–14277, FOR 2–INCH INCLUDING THE STAINLESS STEEL LINER, "MUELLER" 506141 (FOR 2–INCH) OR APPROVED EQUAL, AND MUELLER 110 COMPRESSION CONNECTION.

2. METER BOXES FOR 5/8, 3/4, 1, 1½ AND 2 INCH METERS SHALL BE THE OKIE DOKIE #890–40–260282 MEDIUM BOX AND 890–40–260257 MEDIUM LID OR EQUAL.

3. TIE–IN TO EXISTING ⅝, ¾, OR 1 INCH METER AND CONNECT ANGLE VALVE TO EXISTING METER WHERE APPLICABLE.

4. ALL POLY SERVICE LINES SHOULD BE WRAPPED WITH #12 WIRE STRIPPED AND GROUNDED TO EACH FITTING. A CONDUCTIVITY TEST SHOULD BE PERFORMED.

5. ALL PVC WATER MAINS SHOULD BE WRAPPED WITH #6 WIRE STRIPPED AND GROUNDED TO EACH FITTING. A CONDUCTIVITY TEST SHOULD BE PERFORMED.

| DATE: FEB.'09 | SCALE: N.T.S. | TYPICAL WATER SERVICE INSTALLATION | W 300 2 OF 2 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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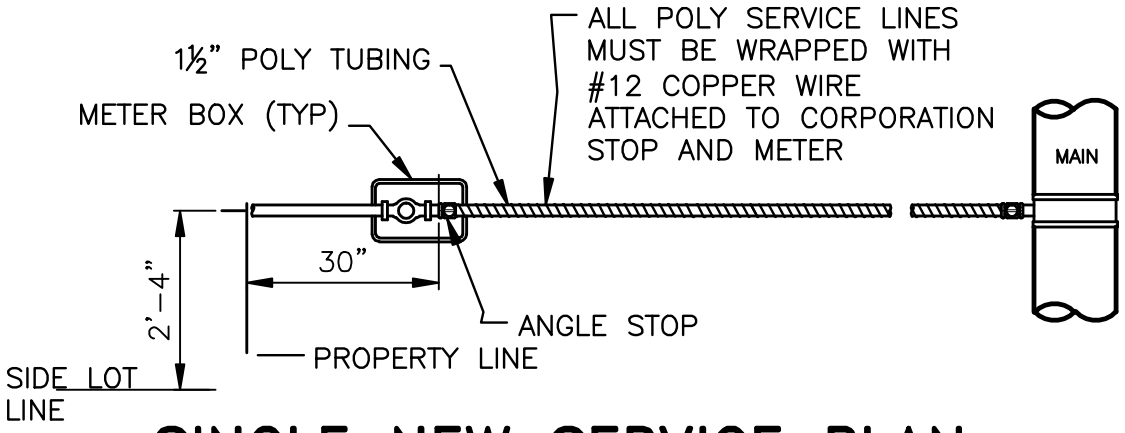
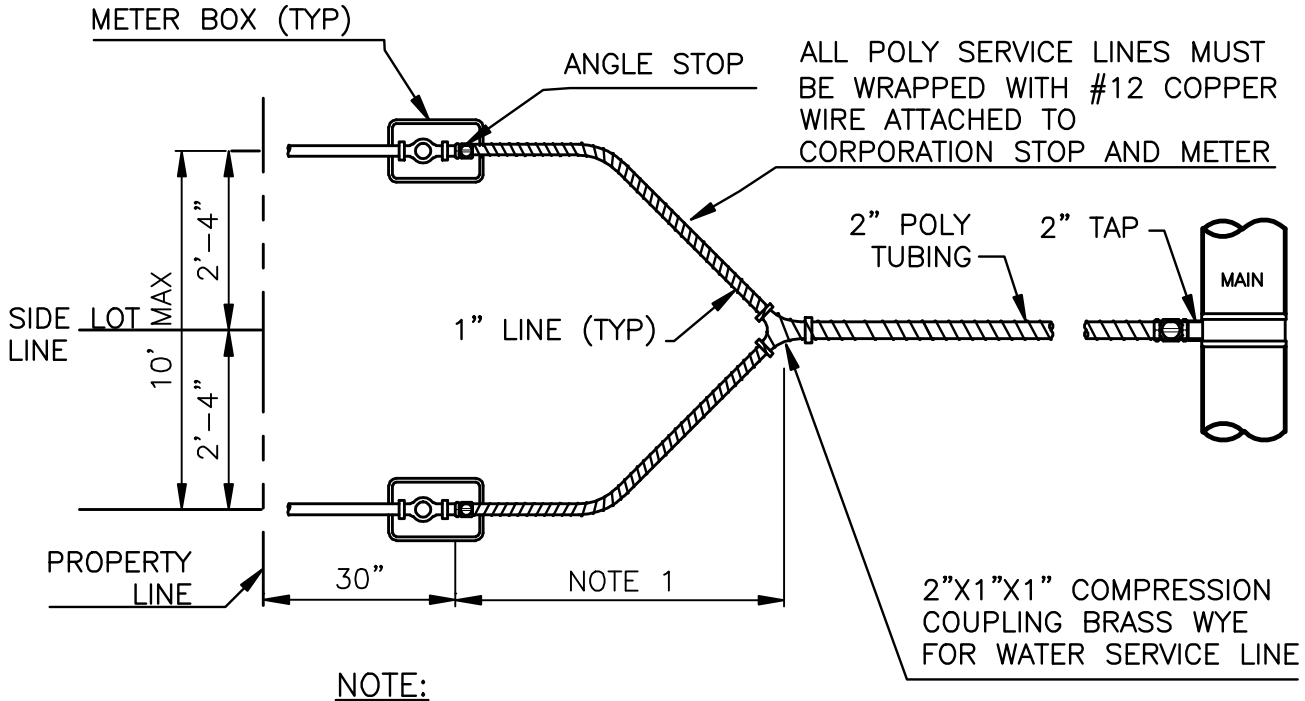



# SINGLE NEW SERVICE PLAN




NOTE:

1. KEEP 1½" WYE AS CLOSE AS POSSIBLE TO METER BOX.

# DOUBLE NEW SERVICE PLAN

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **TYPICAL WATER SERVICE** | **W 301** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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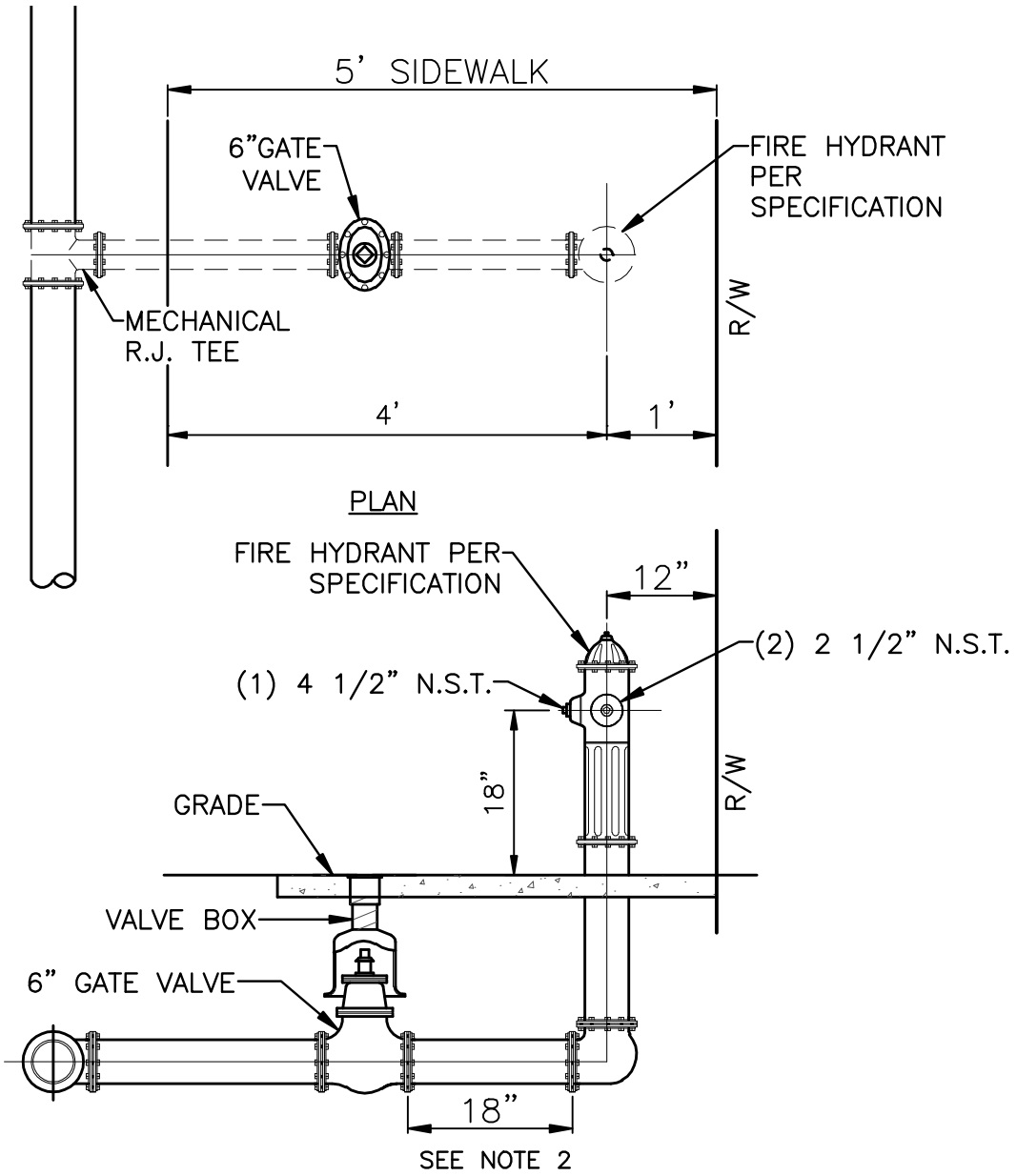


NOTES:

1. ACTUAL LOCATION OF FIRE HYDRANT TO BE DECIDED IN THE FIELD WITH ENGINEER'S APPROVAL.
2. KEEP VALVE AS CLOSE AS POSSIBLE TO THE HYDRANT.

| DATE: FEB'06 | SCALE: N.T.S. | TYPICAL NEW FIRE HYDRANT ASSEMBLY INSTALLATION | W 302 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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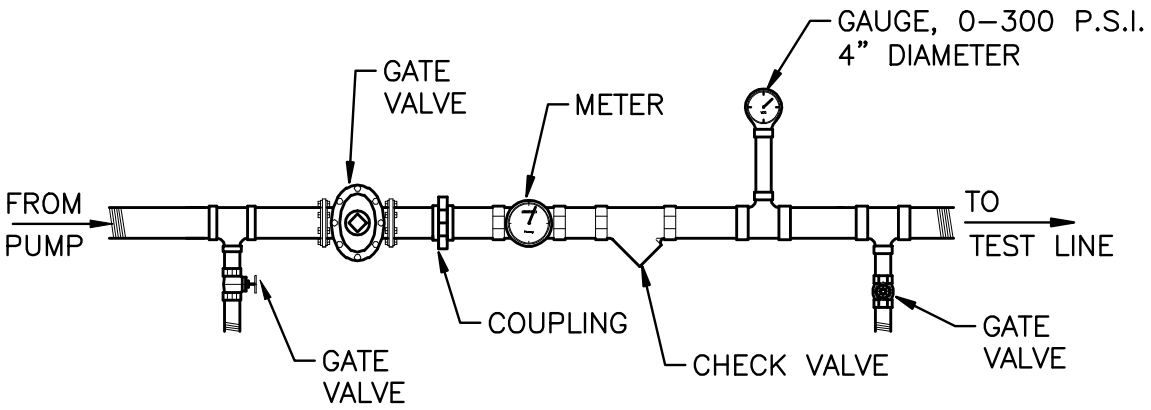


NOTE:
PRESSURE TEST TO INCLUDE
SERVICES TO ANGLE STOP.

| | | | |
|---|---|---|---|
| DATE: FEB'06 | SCALE: N.T.S. | **PRESSURE TEST DETAIL** | **W 306** |
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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# CITY OF FORT LAUDERDALE

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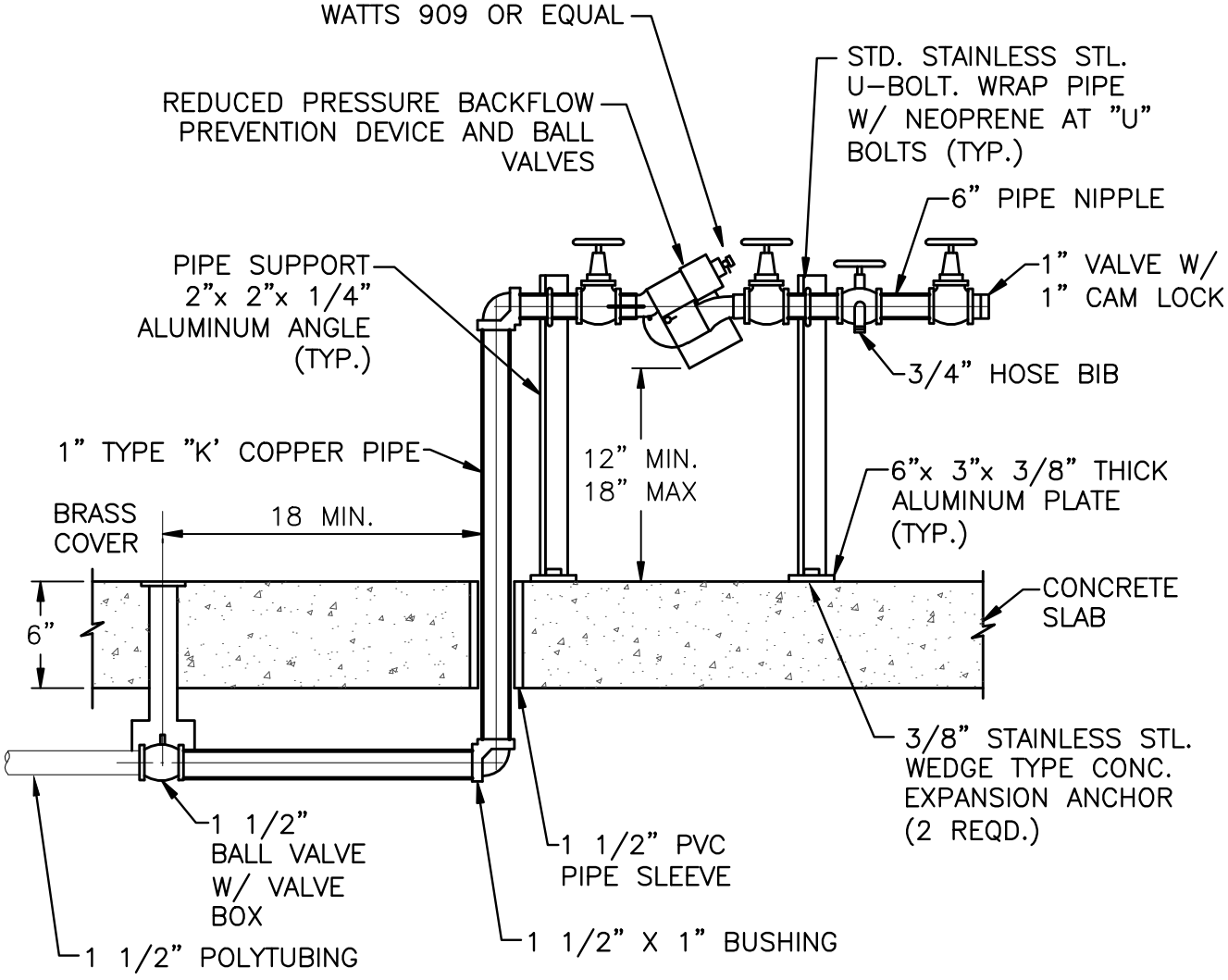


| DATE: FEB'06 | SCALE: N.T.S. | REDUCED PRESSURE BACKFLOW PREVENTER WITH HOSE CONNECTION FOR LIFT STATION | W 307 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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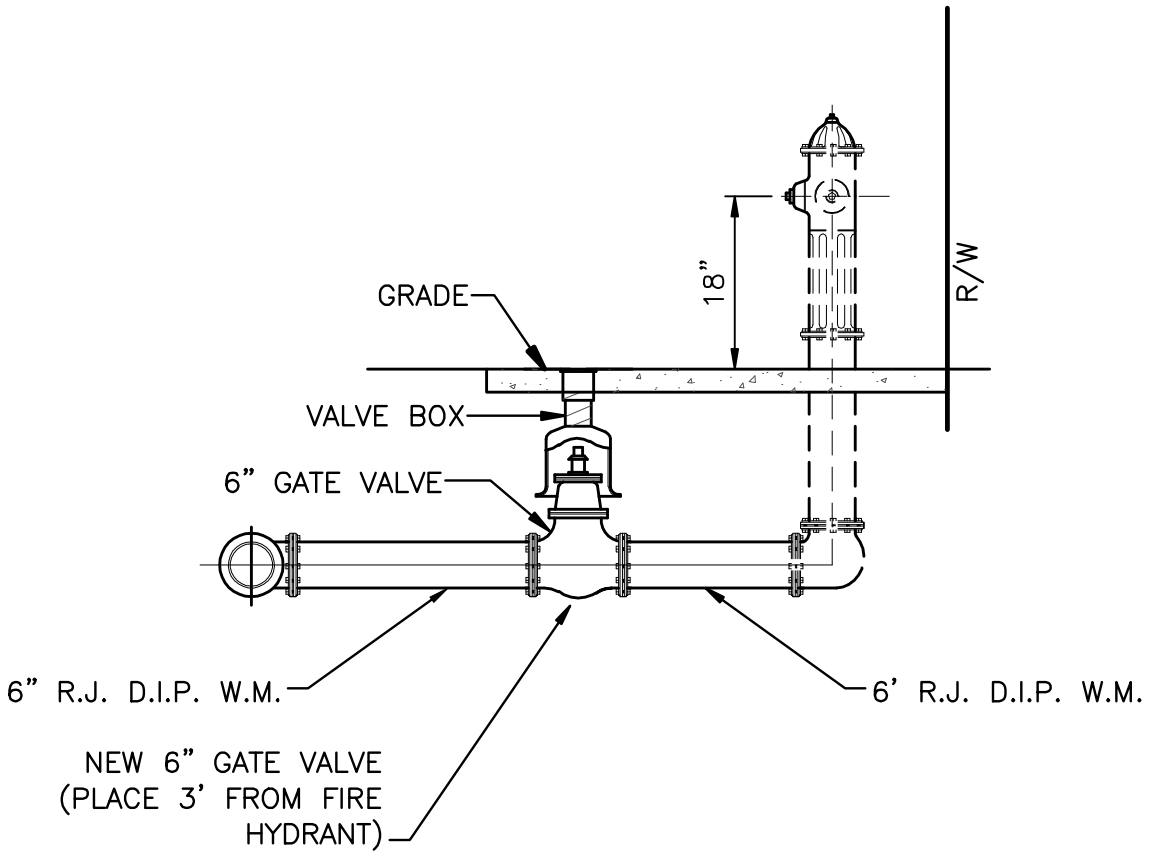


NOTES:

1. RECONNECT EXISTING FIRE HYDRANT TO NEW WATER MAIN.
2. KEEP VALVE AS CLOSE AS POSSIBLE TO THE HYDRANT.
3. WHEN FIRE HYDRANT "TEE" IS ON P.V.C. PIPE RUN, CONSTRUCT 1 LENGTH OF D.I.P. (R.J.) PIPE ON EACH SIDE OF FIRE HYDRANT "TEE".

| DATE: FEB'06 | SCALE: N.T.S. | RELOCATE OR CONNECT EXISTING HYDRANT | W 308 |
|---|---|---|---|
| REVISED: MARCH '09 | DRAWN BY: R.C. | | |

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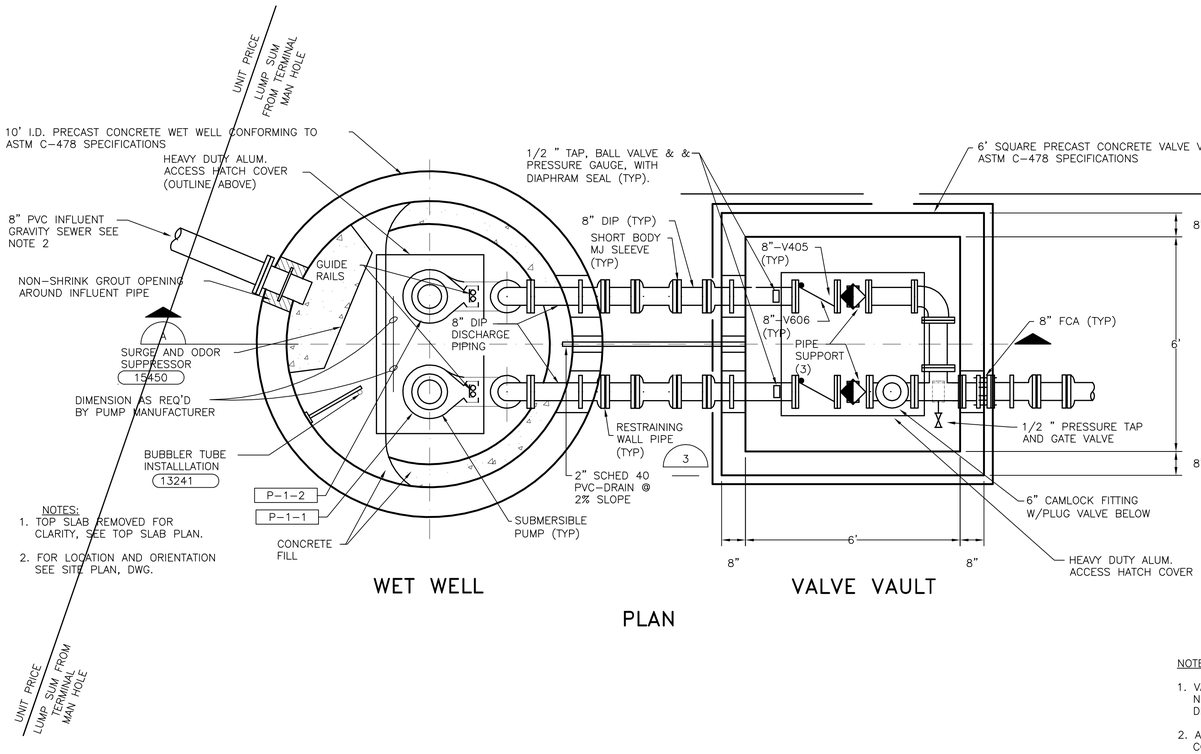
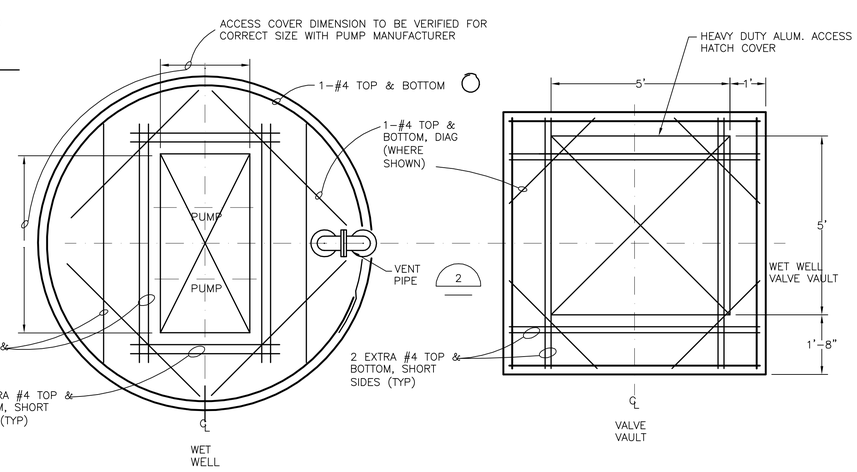
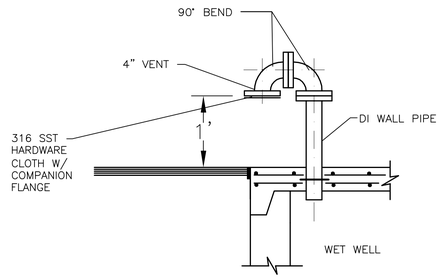


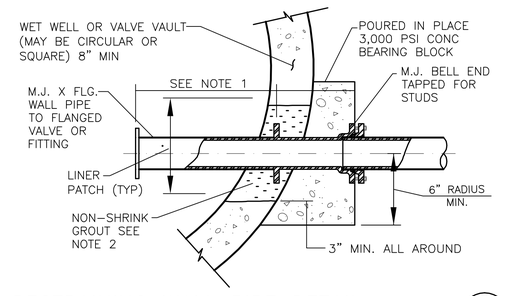

## TOP SLAB PLAN
NTS

NOTES:

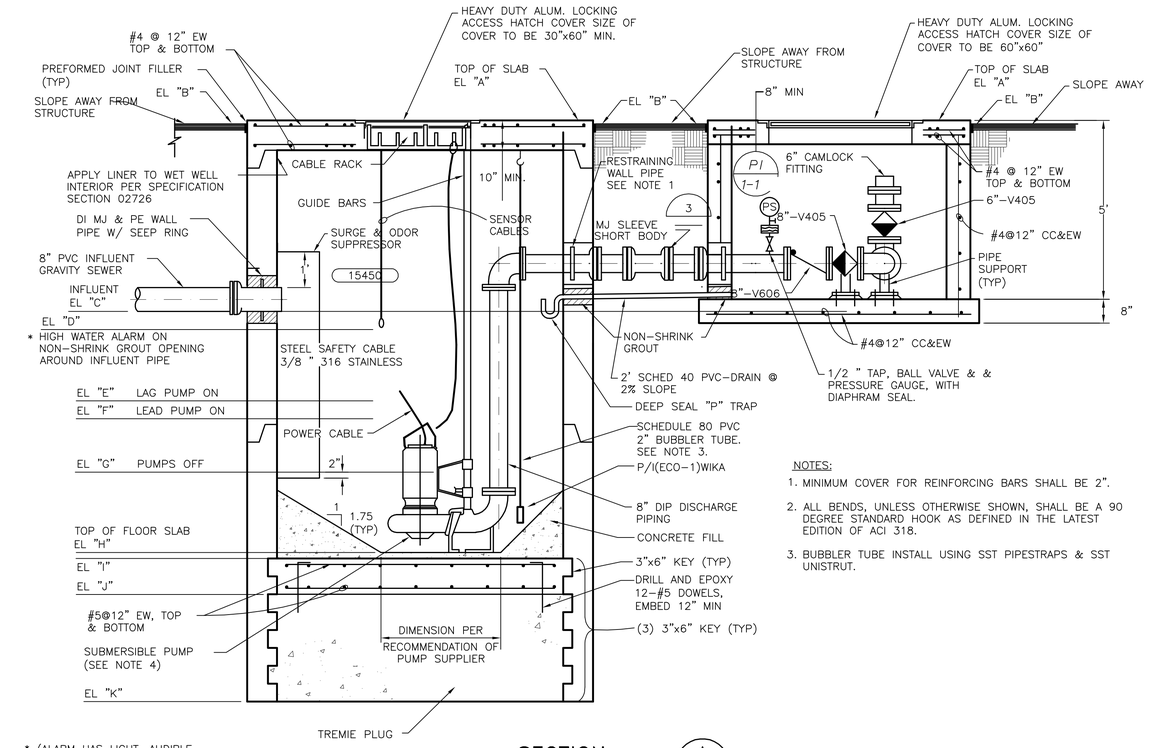
1. VARIES- CONTRACTOR TO ORDER WALL PIPE WITH DIMENSIONS NECESSARY TO CENTER COLLAR IN WALL & PLACE FLANGE AT DESIRED LOCATION.
2. APPLY APPROVED WATERPROOF BONDING AGENT TO EXISTING CONCRETE SURFACE BEFORE PLACING NON-SHRINK GROUT, DRY PACK FROM EARTH SIDE, APPLY APPROVED WATERPROOF COATING AS SPECIFIED TO ELIMINATE SEEPAGE INTO VAULT OR WET WELL FROM PIPE/CONDUIT PENETRATIONS.




## VENT PIPE DETAIL 2
NTS




## RESTRAINING WALL PIPE DETAIL 3
NTS




* (ALARM HAS LIGHT, AUDIBLE ALARM, AND DIALER RTU TO CITY: ALARM WILL BE DEACTIVATED BY A MANUAL SWITCH)

## SECTION A
NTS

NOTES:

1. MINIMUM COVER FOR REINFORCING BARS SHALL BE 2".
2. ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE A 90 DEGREE STANDARD HOOK AS DEFINED IN THE LATEST EDITION OF ACI 318.
3. BUBBLER TUBE INSTALL USING SST PIPESTRAPS & SST UNISTRUT.

## SCHEDULE OF ELEVATIONS (FEET MSL)

| LETTER | LEVEL DESCRIPTION | PS-1 (A-101) | PS-2 (A-102) | PS-3 (A-103) |
|---|---|---|---|---|
| A | TOP OF PUMP STATION & VAULT SLABS | 9.90 | 8.70 | 7.80 |
| B | FINISH GRADE ADJACENT SLAB | 9.40 | 8.20 | 7.30 |
| C | INFLUENT GRAVITY SEWER INVERT | (-)3.15 | (-)3.12 | (-)3.98 |
| D | HIGH WATER ALARM | (-)4.10 | (-)4.10 | (-)5.00 |
| E | LAG PUMP ON | (-)6.10 | (-)6.10 | (-)7.00 |
| F | LEAD PUMP ON | (-)8.10 | (-)8.10 | (-)9.00 |
| G | PUMPS OFF | (-)10.10 | (-)11.10 | (-)12.00 |
| H | TOP OF FLOOR SLAB | (-)12.10 | (-)13.10 | (-)14.00 |
| I | TOP OF KEY | (-)12.40 | (-)13.40 | (-)14.30 |
| J | BOTTOM OF KEY | (-)13.40 | (-)14.40 | (-)15.30 |
| K | BOTTOM OF TREMIE PLUG | (-)17.40 | (-)18.40 | (-)19.30 |
| | INSIDE DIAMETER PUMP STATION | 6' | 6' | 6' |
| | FORCE MAIN PIPING (D.I.P.) | 4" | 6" | 6" |
| | PUMP OPERATION REQUIREMENTS | 178 gpm @ 123' 25 HP(MAX) | 253 gpm @ 79' 20 HP(MAX) | 243 gpm @ 86' 20 HP(MAX) |

ENGINEER
PETER PARTINGTON
REG. No: 45099
DATE:

TEL: (954) 828-5240
FAX: (954) 828-5074

DRAWN BY: | DATE: MM/DD/YY | DESIGNED BY: | SCALE: | CHECKED BY: | FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|

NOT FOR CONSTRUCTION OR BID

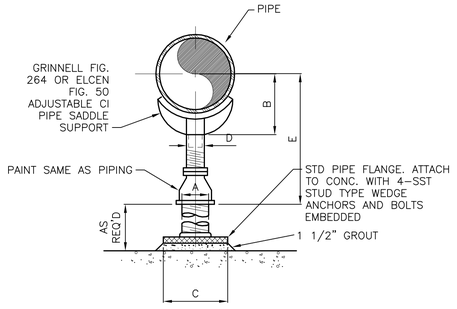
PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO. X-1 | OF XX

TOTAL: 0

CAD FILE: XXXXX-XXX-XXX0000

DRAWING FILE NO. 4-XXX-XX

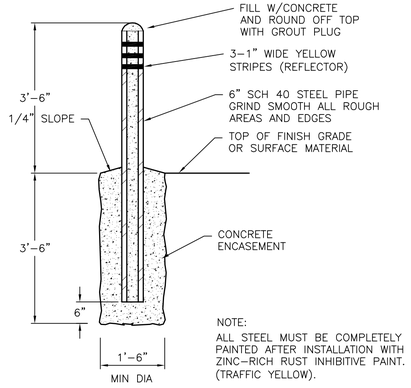



NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO GRINNELL FIGURE 167 OR ELCEN FIGURE 219, WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE.

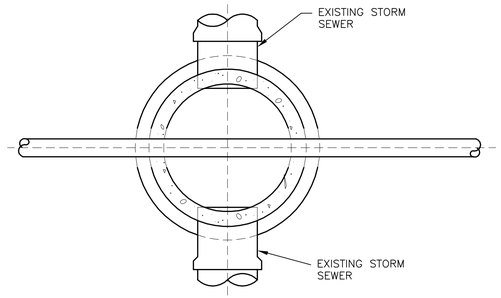
| DIMENSION TABLE | | | | | | |
|---|---|---|---|---|---|---|
| PIPE SIZE | A | B | C | D | E | |
| | | | | | MIN. | MAX. |
| 4" | 3" | 4–1/4" | 9" | 2–1/2" | 9–1/4" | 14" |
| 6" | 3" | 5–1/2" | 9" | 2–1/2" | 10–1/2" | 15–1/4" |
| 8" | 3" | 6–7/8" | 9" | 2–1/2" | 11–3/4" | 16–1/2" |
| 10" | 3" | 8–1/2" | 9" | 2–1/2" | 13–1/2" | 18–1/4" |
| 12" | 3" | 9–15/16" | 9" | 2–1/2" | 15" | 19–3/4" |

## PIPE SUPPORT 500

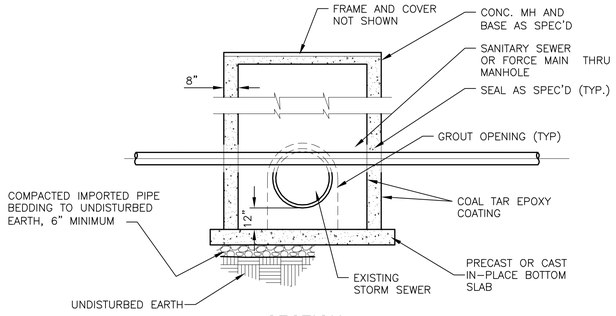



NOTE:
ALL STEEL MUST BE COMPLETELY PAINTED AFTER INSTALLATION WITH ZINC–RICH RUST INHIBITIVE PAINT. (TRAFFIC YELLOW).

## GUARD POST 502



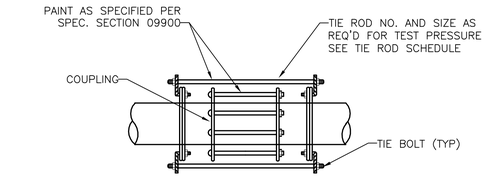

## PLAN



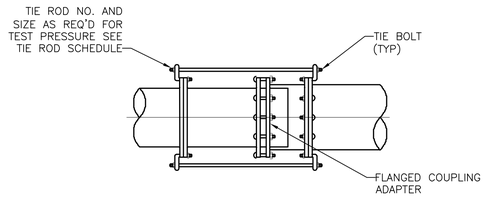

## SECTION

NOTE: CONTRACTOR SHALL DETERMINE PIPE SIZES, PIPE INVERT ELEVATIONS AND ANGLES OF PIPE ENTRY AND EXIT.

## CONFLICT MANHOLE FOR EXISTING STORM SEWERS 604
(IN ACCORDANCE W/ FDOT #307)



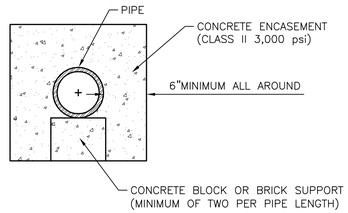

## RESTRAINED COUPLING




## RESTRAINED FLANGED COUPLING ADAPTER

| TIE ROD SCHEDULE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEST PRESSURE | | 25 PSI | | 50 PSI | | 100 PSI | | 150 PSI | | 225 PSI | | 375 PSI | |
| PIPE DIAMETER (IN.) | MINIMUM PIPE WALL THICKNESS (IN.) * | TIE RODS | | TIE RODS | | TIE RODS | | TIE RODS | | TIE RODS | | TIE RODS | |
| | | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD | DIA (IN.) | NO. REQD |
| 6 | 3/16 | — | — | — | — | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 |
| 8 | 3/16 | — | — | — | — | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 |
| 10 | 3/16 | — | — | — | — | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 | 7/8 | 2 |
| 12 | 3/16 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 5/8 | 2 | 3/4 | 2 | 7/8 | 4 |

## RESTRAINED COUPLING DETAILS 501




NOTES:

1. WHERE MINIMUM COVER, 36", IS NOT AVAILABLE ENCASEMENT WILL BE REQUIRED.
2. ALL CONCRETE ENCASEMENTS MUST BE FORMED AND INSPECTED BY THE CITY'S INSPECTOR PRIOR TO PLACING CONCRETE AND BACKFILLING.
3. WRAP PIPE IN VISQUEEN PRIOR TO POURING ENCASEMENT.
4. AT CROSSINGS, ENCASEMENT SHALL EXTEND TEN FEET (10') ON EITHER SIDE OF CROSSING.
5. BEGINNING AND ENDING OF ENCASEMENTS SHALL NOT BE MORE THAN 6" FROM A PIPE JOINT.

## PIPE CONCRETE ENCASEMENT 503

ENGINEER
PETER PARTINGTON
REG. No: 45099
DATE:
TEL: (954) 828–1240
FAX: (954) 828–5074

DRAWN BY: ENG.
DATE: FEB., 2006
DESIGNED BY: WW2011
SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|
| | | | | |

NOT FOR CONSTRUCTION OR BID

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO. X-1 OF XX

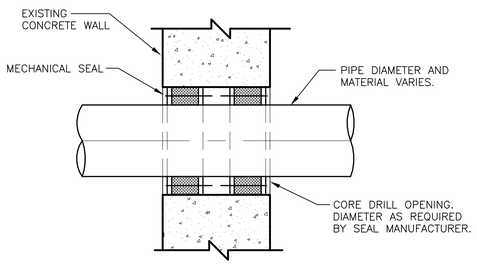
TOTAL: 0

CAD FILE: XXXXX–XXX–XXXOOOO

DRAWING FILE NO. 4–XXX–XX

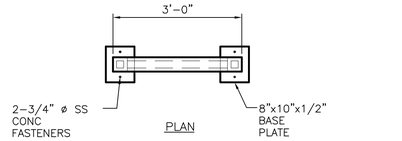
CIVIL04

7/17/2019 2:49 PM

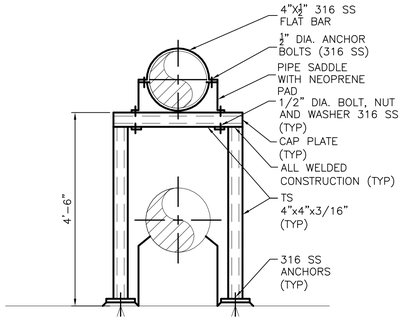



## CORE DRILLED OPENING AND MECHANICAL SEAL PENETRATION THROUGH EXISTING CONCRETE

957

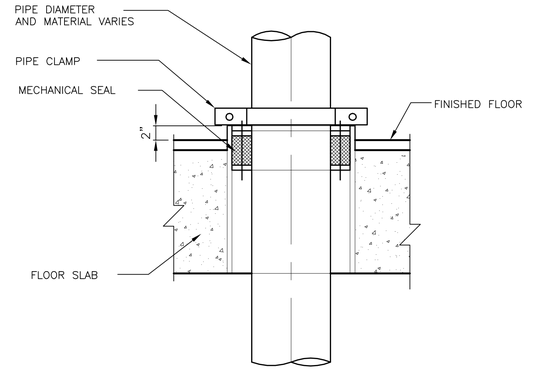



PLAN



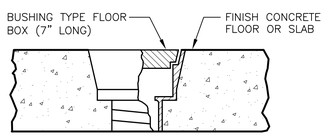

ELEVATION

958



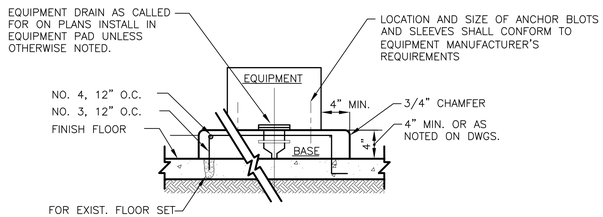

## CORED DRILLED OPENING AND MECHANICAL SEAL PENETRATION THROUGH EXISTING CONCRETE

959



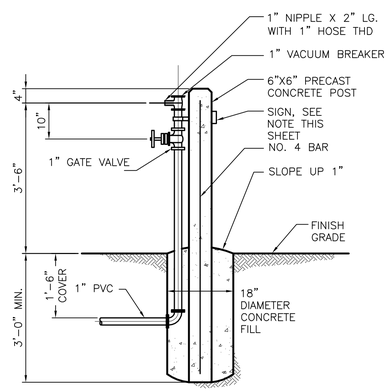

## FLOOR BOX

930



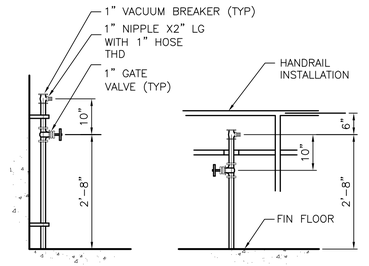

## EQUIPMENT PAD

821




## HOSE BIBB

961




## ELEVATION HOSE BIBB

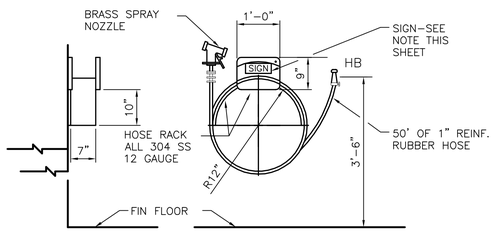
931

NOTE:

ANCHOR WASH HOSE STATION TO WALL OR HANDRAIL WITH STAINLESS STEEL HARDWARE AS REQUIRED

POTABLE/NON-POTABLE WATER SIGN

THE CONTRACTOR SHALL PROVIDE A SIGN ABOVE ALL HOSE BIBBS WHICH SHALL STATE EITHER "POTABLE" OR "NON-POTABLE, DO NOT DRINK." THE SIGN SHELL BE MADE OF LAMINATED PLASTIC WITH A BLACK FACE AND WHITE LETTERS APPROX. 3/4" HIGH. ATTACH THE SIGN TO STRUCTURE, WASH HOSE STATION OR HANDRAIL WITH 304 STAINLESS STEEL HARDWARE AS REQUIRED.




## WASH HOSE STATION

935

NOT FOR CONSTRUCTION OR BID

ENGINEER
PETER PARTINGTON
REG. No: 45099
DATE:

TEL: (954) 828-5240
FAX: (954) 828-5074

| DRAWN BY: | DATE: |
|---|---|
| ENG. | FEB., 2006 |
| DESIGNED BY: | SCALE: |
| WW2011 | N.T.S. |
| CHECKED BY: | |
| WW2011 | |
| FIELD BOOK: | |

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

| REVISIONS | | | |
|---|---|---|---|
| NO. | DATE | BY CHK'D | DESCRIPTION |
| | | | |

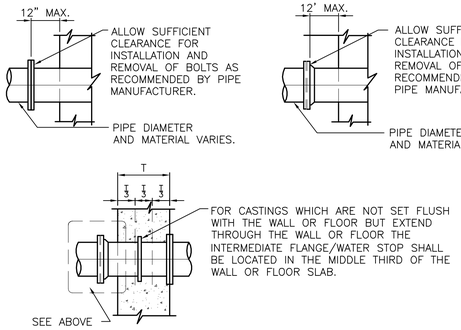
PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

| SHEET NO. | OF |
|---|---|
| X-1 | XX |

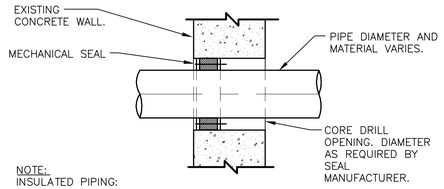
TOTAL: 0

CAD FILE: XXXXX-XXX-XXXOOOO

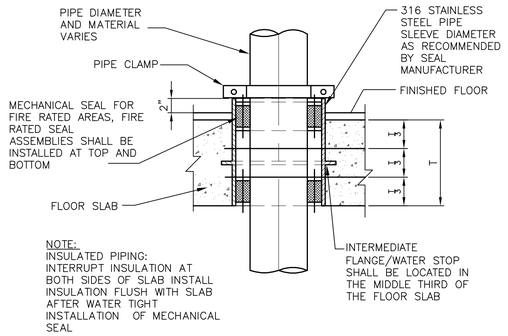
DRAWING FILE NO. 4-XXX-XX



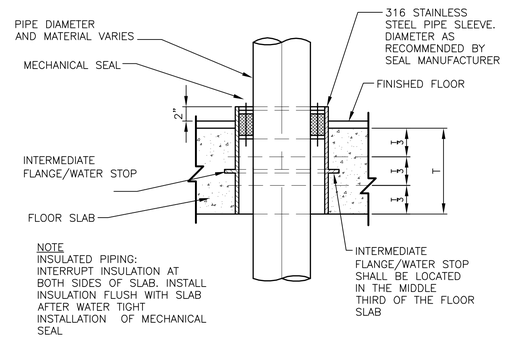

CATSING WITH NON FLUSH– JOINTS (923)



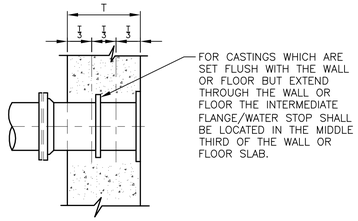

CORE DRILLED OPENING AND MECHANICAL SEAL PENETRATION THROUGH EXISTING CONCRETE (924)



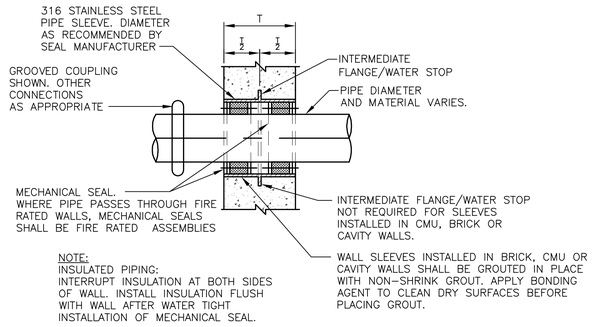

FLOOR SLEEVE WITH DUAL MECHANICAL SEAL (925)



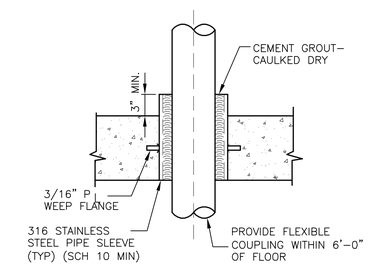

SLEEVE WITH MECHANICAL SEAL (926)



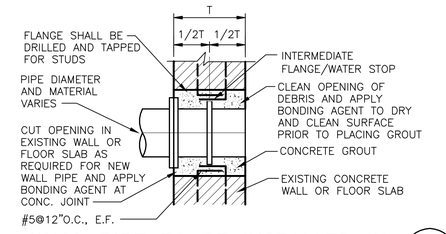

CASTING WITH FLUSH JOINTS (927)



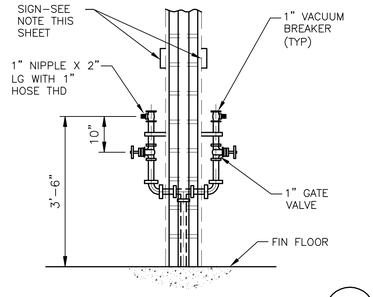

WALL SLEEVE WITH MECHANICAL SEAL FOR CONCRETE, BRICK, CMU OR CAVITY WALLS (928)



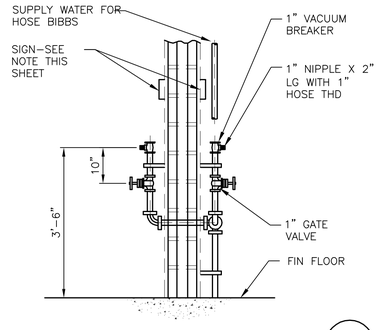

PIPE SLEEVE (WET FLOOR) (929)



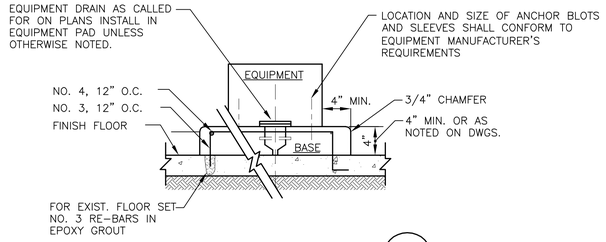

WALL PIPE TO BE INSTALLED IN EXISTING WALLS OR FLOOR SLABS (932)



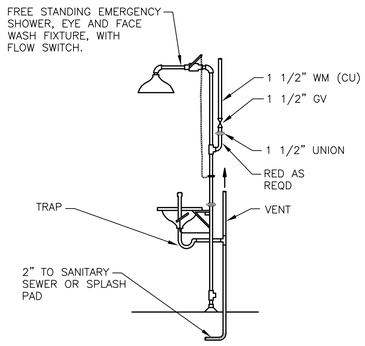

ELEVATION HOSE BIBB (933)




ELEVATION HOSE BIBB (934)




EQUIPMENT PAD (821)




EMERGENCY SHOWER/EYE & FACE WASH (936)

NOT FOR CONSTRUCTION OR BID

ENGINEER
PETER PARTINGTON
REG. No: 45099
DATE:
TEL: (954) 828-5240
FAX: (954) 828-5076

DRAWN BY: ENG.
DATE: FEB., 2006
DESIGNED BY: WW2011
SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK:

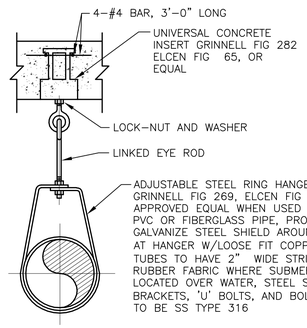
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

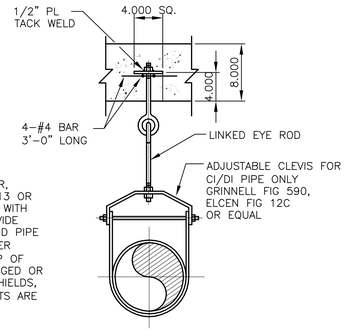
| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO. X-1 OF XX
TOTAL: 0
CAD FILE: XXXXX–XXX–XXX0000
DRAWING FILE NO. 4–XXX–XX




TYPE 'A'
FOR HANGER RODS
3/4" DIA AND SMALLER



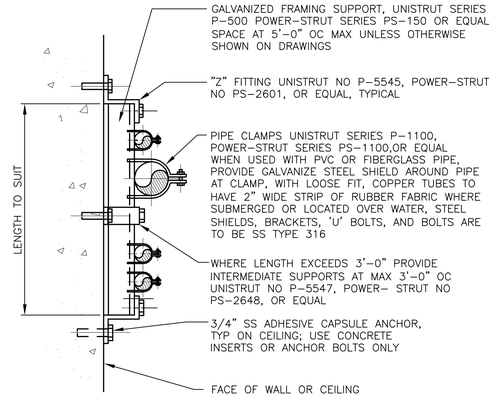

TYPE 'B'
FOR HANGER RODS 7/8" DIA
AND LARGER, AND MIN 8" THICK CONCRETE

NOTE:

GALVANIZE ALL PARTS
AFTER FABRICATION

| PIPE HANGER RODS & SUPPORT SPACING | | | | | |
|---|---|---|---|---|---|
| PIPE DIA (INCHES) | ROD DIA (INCHES) | MAX SUPPORT SPACING (FEET) | | WEIGHT LIMIT (LBS) | |
| | | STL PIPE | CI/DI PIPE | TYPE 'A' | TYPE 'B' |
| 1 & SMALLER | 3/8 | 5 | MIN 1 HANGER PER PIPE LENGTH AND FITT MAX SPACING AS FEET. LOCATE HANGER CLOSE TO EACH CONNECTION | 610 | --- |
| 1 ? TO 2 | 3/8 | 5 | | 610 | --- |
| 2 ? TO 3 ? | 1/2 | 10 | | 1130 | --- |
| 4 TO 5 | 5/8 | 10 | | 1430 | --- |
| 6 | 3/4 | 10 | | 1430 | 3800 |
| 8,10,12 | 7/8 | 10 | | --- | 3800 |
| 14,16 | 1 | 10 | | --- | 3800 |

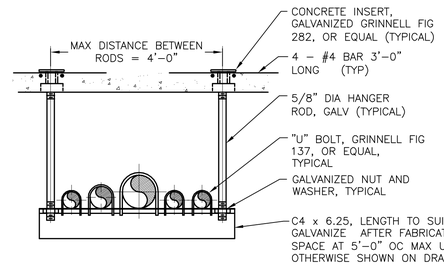
PIPE HANGER 948




NOTE:

WHERE SUBMERGED OR LOCATED ON OR ABOVE TOP OF WALL OF HYDRAULIC STRUCTURE, FRAMING SUPPORT, Z FITTINGS, INTERMEDIATE SUPPORTS, BOLTS, WASHERS AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL

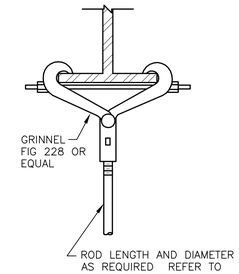
FLUSH MOUNTED PIPE SUPPORT 949



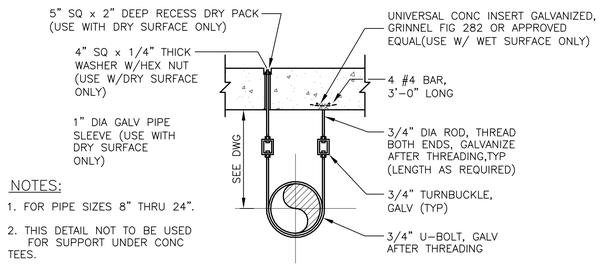

NOTE:

WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE GALVANIZE STEEL SHIELD AROUND PIPE AT "U" BOLT, WITH LOOSE FIT, WRAP COPPER TUBES WITH 2" WIDE STRIP OF RUBBER FABRIC WHERE SUBMERGED OR LOCATED OVER WATER, STEEL SHIELDS, BRACKETS, 'U' BOLTS, AND BOLTS ARE TO BE SS TYPE 316

TRAPEZE PIPE HANGER 950



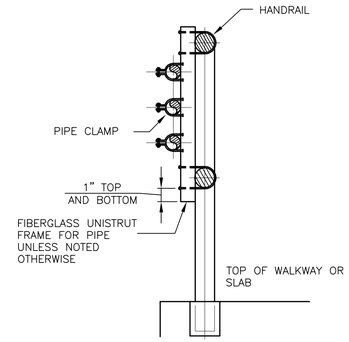

BEAM CLAMP 822



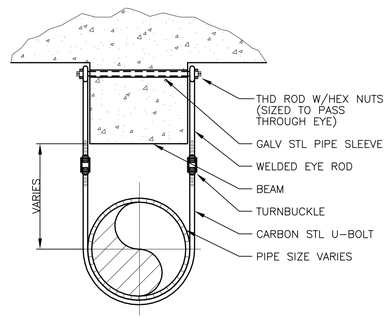

NOTES:

1. FOR PIPE SIZES 8" THRU 24".
2. THIS DETAIL NOT TO BE USED FOR SUPPORT UNDER CONC TEES.

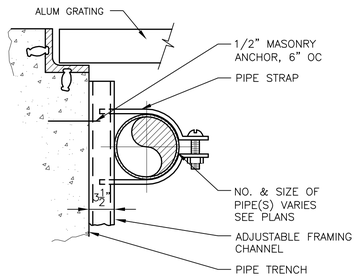
DUAL ROD PIPE HANGER 951




HANDRAIL SUPPORTED PIPE 952




953

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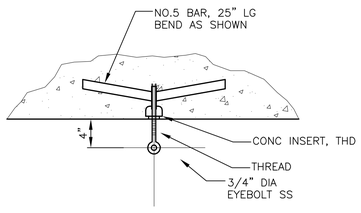
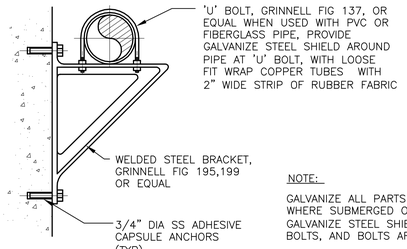



955




NOTE:

GALVANIZE ALL PARTS AFTER FABRICATION WHERE SUBMERGED OR LOCATED OVER WATER, GALVANIZE STEEL SHIELDS, BRACKETS, 'U' BOLTS, AND BOLTS ARE TO BE SS TYPE 316

NOTES:

1. USE WASHERS WITH NUTS AND BOLTS.
2. ALL ANCHORS, FASTENERS, BOLTS, NUTS, WASHERS, SCREWS, ETC. SHALL BE 316 STAINLESS STEEL.
3. DETAILS SHOWN ARE INTENDED TO COVER A WIDE RANGE OF PROJECT SITUATIONS. ALL DETAILS MAY NOT APPLY TO THIS PROJECT.

PIPE BRACKET 956

ENGINEER
PETER PARTINGTON
REG. No: 45099
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DRAWN BY: ENG.
DATE: FEB., 2006
DESIGNED BY: WW2011
SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|

NOT FOR CONSTRUCTION OR BID

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO. X-1 OF XX

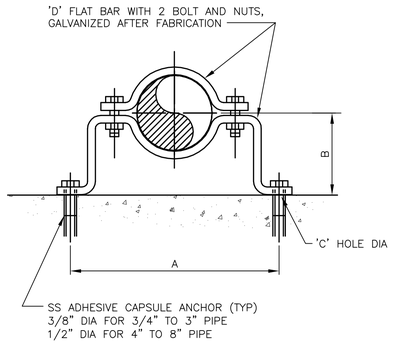
TOTAL: 0

CAD FILE: XXXXX–XXX–XXX0000

DRAWING FILE NO. 4–XXX–XX

| DIMENSIONS IN INCHES | | | | | |
|---|---|---|---|---|---|
| PIPE DIA. | 'A' | 'B' SEE NOTE 3 BELOW | 'C' HOLE DIA. | 'D' FLAT BAR SIZE | LOAD RATING LBS.* |
| 3/4 | 5–15/16 | 2–1/2 | 7/16 | 3/16 X 1–1/4 | 300 |
| 1 | 6–1/4 | 2–5/8 | 7/16 | 3/16 X 1–1/4 | 300 |
| 1–1/4 | 6–11/16 | 2–3/4 | 7/16 | 3/16 X 1–1/4 | 300 |
| 1–1/2 | 6–15/16 | 3 | 7/16 | 3/16 X 1–1/4 | 300 |
| 2 | 8–5/16 | 3–3/16 | 7/16 | 1/4 X 1–1/4 | 500 |
| 2–1/2 | 8–7/8 | 3–7/16 | 7/16 | 1/4 X 1–1/4 | 500 |
| 3 | 9–1/8 | 3–3/4 | 7/16 | 1/4 X 1–1/4 | 500 |
| 3–1/2 | 10–1/16 | 4 | 7/16 | 1/4 X 1–1/4 | 500 |
| 4 | 10–9/16 | 4–1/4 | 9/16 | 1/4 X 1–1/2 | 600 |
| 5 | 11–3/4 | 4–3/4 | 9/16 | 1/4 X 1–1/2 | 600 |
| 6 | 14–3/8 | 5–5/16 | 9/16 | 3/8 X 1–1/2 | 850 |
| 8 | 16–5/8 | 6–5/16 | 9/16 | 3/8 X 1–1/2 | 850 |

* SAFETY FACTOR OF 5

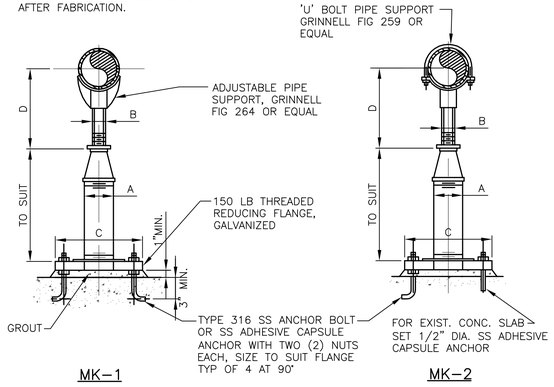



NOTES:

1. WHERE SUBMERGED OR LOCATED ON OR ABOVE TOP OF WALL OF HYDRAULIC STRUCTURE, PIPE CLAMP, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL
2. WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE GALVANIZE STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2" STRIP OF RUBBER FABRIC
3. FOR FLANGED PIPING INCREASE 'B' DIMENSION AS REQUIRED
4. ALL ANCHOR BOLTS SHALL BE TYPE 316 SS.

PIPE CLAMP FOR INDIVIDUAL PIPES (937)

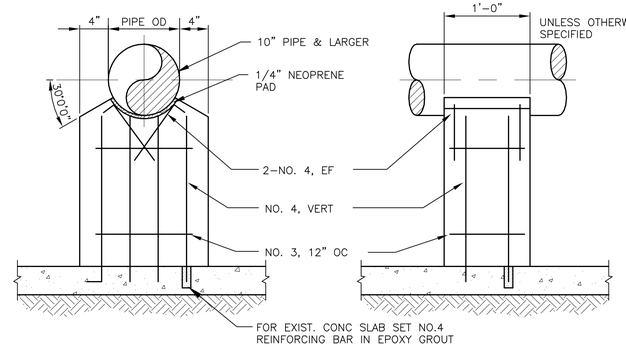
NOTE:
HOT DIP GALVANIZED SUPPORTS AFTER FABRICATION.



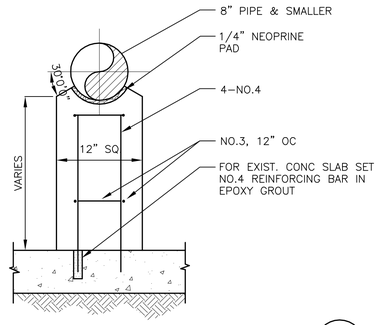

ADJUSTABLE PIPE SUPPORT (938)

| ADJUSTABLE PIPE SUPPORT APPROX DIMENSIONS IN INCHES | | | | | |
|---|---|---|---|---|---|
| PIPE SIZE | A | B | C | D MIN | D MAX |
| 2 1/2 | 2 1/2 | 1 1/2 | 9 | 8 | 11 1/2 |
| 3 | 2 1/2 | 1 1/2 | 9 | 8 1/4 | 11 3/4 |
| 3 1/2 | 2 1/2 | 1 1/2 | 9 | 8 1/2 | 12 |
| 4 | 3 | 2 1/2 | 9 | 10 1/4 | 14 |
| 6 | 3 | 2 1/2 | 9 | 11 5/8 | 15 1/4 |
| 8 | 3 | 2 1/2 | 9 | 13 5/8 | 16 1/2 |
| 10 | 3 | 2 1/2 | 9 | 14 5/8 | 18 1/4 |
| 12 | 3 | 2 1/2 | 9 | 15 5/8 | 19 3/4 |
| 14 | 4 | 3 | 11 | 18 5/8 | 20 3/4 |
| 16 | 4 | 3 | 11 | 19 7/8 | 22 1/4 |
| 18 | 6 | 3 1/2 | 13 1/2 | 21 1/4 | 24 |
| 20 | 6 | 3 1/2 | 13 1/2 | 23 1/4 | 25 1/2 |
| 24 | 6 | 4 | 13 1/2 | 26 1/2 | 28 1/4 |
| 30 | 6 | 4 | 13 1/2 | 29 5/8 | 31 1/2 |
| 32 | 6 | 4 | 13 1/2 | 30 5/8 | 32 3/4 |
| 36 | 6 | 4 | 13 1/2 | 32 5/8 | 34 3/4 |

NOTE:
1. UNDER VALVES, METERS OR OTHER SPECIAL APPURTENANCES A FABRICATED SUPPORT PIECE MAY BE UTILIZED AS ACCEPTABLE TO ENGINEER

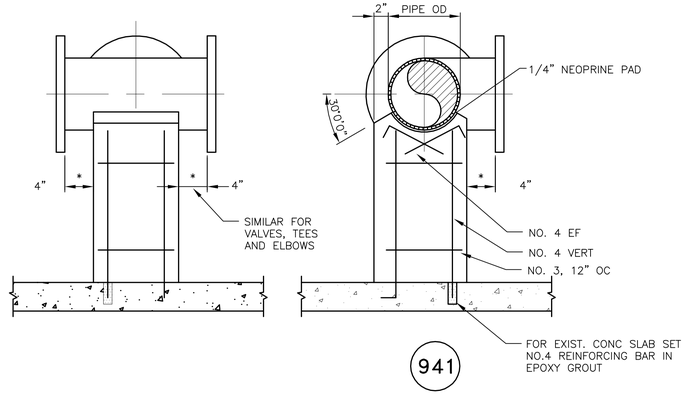



10" PIPE AND LARGER (939)

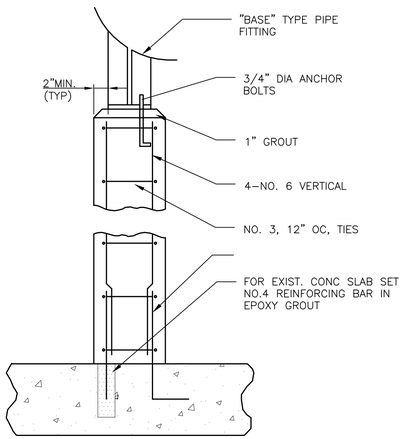



8" PIPE OR SMALLER (940)

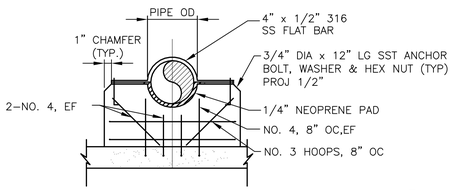
* INCREASE 4" CLEARANCE AS REQUIRED IF BOLT HAS TO BE INSERTED FROM THE SUPPORT SIDE OF THE CONNECTION.



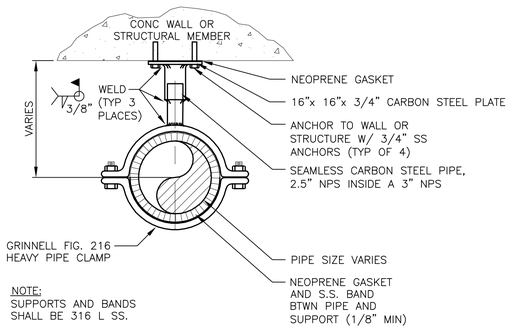

941




942

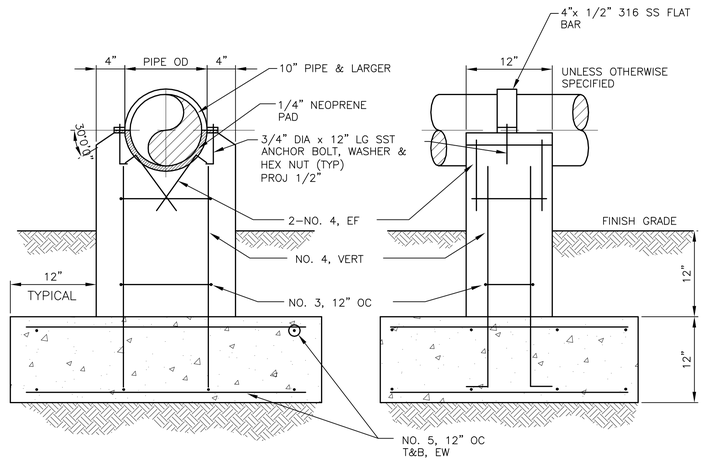



REACTION TYPE PIPE SUPPORT (944)

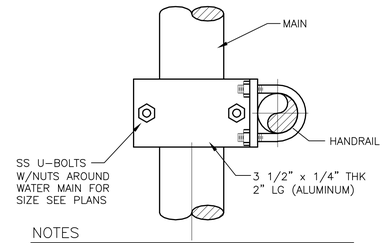



NOTE:
SUPPORTS AND BANDS SHALL BE 316 L SS.

945




10" PIPE AND LARGER (946)




NOTES

1. USE WASHERS WITH NUTS AND BOLTS.
2. ALL ANCHORS, FASTENERS, BOLTS, NUTS, WASHERS, SCREWS, ETC. SHALL BE 316 STAINLESS STEEL.
3. DETAILS SHOWN ARE INTENDED TO COVER A WIDE RANGE OF PROJECT SITUATIONS. ALL DETAILS MAY NOT APPLY TO THIS PROJECT.

947

ENGINEER
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DRAWN BY: ENG.
DATE: FEB., 2006
DESIGNED BY: WW2011
SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|
| | | | | |

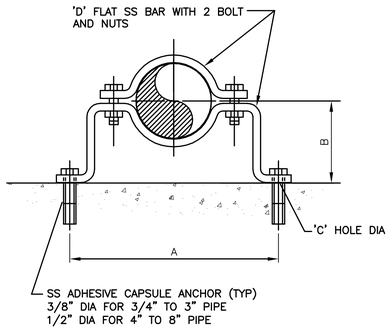
NOT FOR CONSTRUCTION OR BID

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

| SHEET NO. | OF |
|---|---|
| X-1 | XX |
| TOTAL: | 0 |
| CAD FILE: XXXXX–XXX–XXXOOOO | |
| DRAWING FILE NO. 4–XXX–XX | |

| DIMENSIONS IN INCHES | | | | | |
|---|---|---|---|---|---|
| PIPE DIA. | 'A' | 'B' SEE NOTE 3 BELOW | 'C' HOLE DIA. | 'D' FLAT BAR SIZE | LOAD RATING LBS.* |
| 3/4 | 5-15/16 | 2-1/2 | 7/16 | 3/16 X 1-1/4 | 300 |
| 1 | 6-1/4 | 2-5/8 | 7/16 | 3/16 X 1-1/4 | 300 |
| 1-1/4 | 6-11/16 | 2-3/4 | 7/16 | 3/16 X 1-1/4 | 300 |
| 1-1/2 | 6-15/16 | 3 | 7/16 | 3/16 X 1-1/4 | 300 |
| 2 | 8-5/16 | 3-3/16 | 7/16 | 1/4 X 1-1/4 | 500 |
| 2-1/2 | 8-7/8 | 3-7/16 | 7/16 | 1/4 X 1-1/4 | 500 |
| 3 | 9-1/8 | 3-3/4 | 7/16 | 1/4 X 1-1/4 | 500 |
| 3-1/2 | 10-1/16 | 4 | 7/16 | 1/4 X 1-1/4 | 500 |
| 4 | 10-9/16 | 4-1/4 | 9/16 | 1/4 X 1-1/2 | 600 |
| 5 | 11-3/4 | 4-3/4 | 9/16 | 1/4 X 1-1/2 | 600 |
| 6 | 14-3/8 | 5-5/16 | 9/16 | 3/8 X 1-1/2 | 850 |
| 8 | 16-5/8 | 6-5/16 | 9/16 | 3/8 X 1-1/2 | 850 |

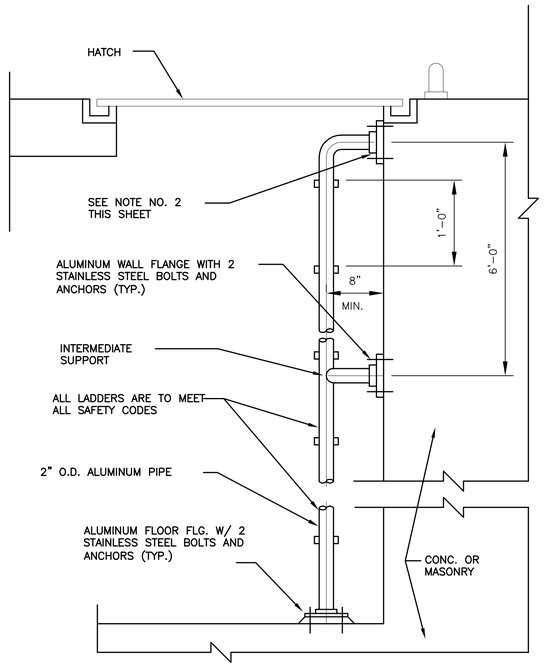
* SAFETY FACTOR OF 5



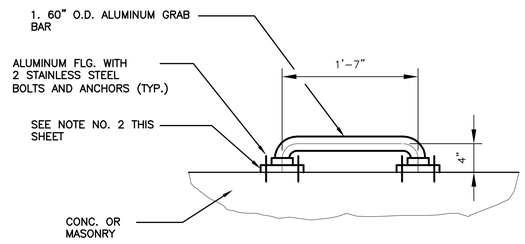

NOTES:

1. PIPE CLAMP, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL
2. WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE STAINLESS STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2" STRIP OF RUBBER FABRIC
3. FOR FLANGED PIPING INCREASE 'B' DIMENSION AS REQUIRED
4. ALL ANCHOR BOLTS SHALL BE TYPE 316 SS.

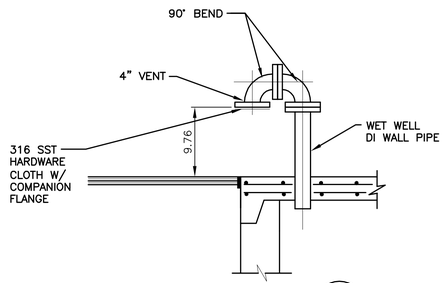
PIPE CLAMP FOR INDIVIDUAL PIPES (962)



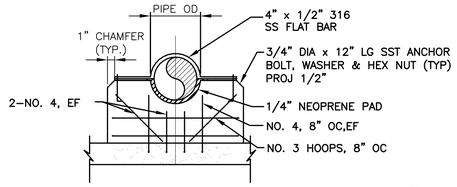

TYPICAL ALUMINUM LADDER (IN PIT) (126)



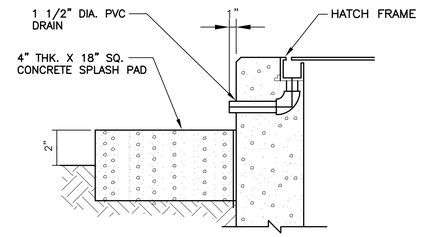

TYPICAL GRAB BAR (125)



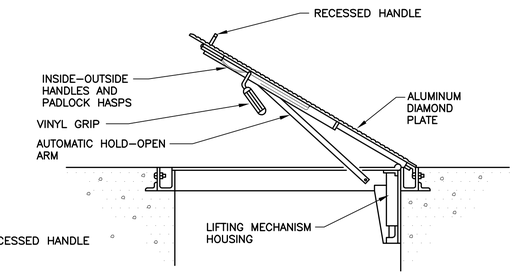

VENT PIPE (963)



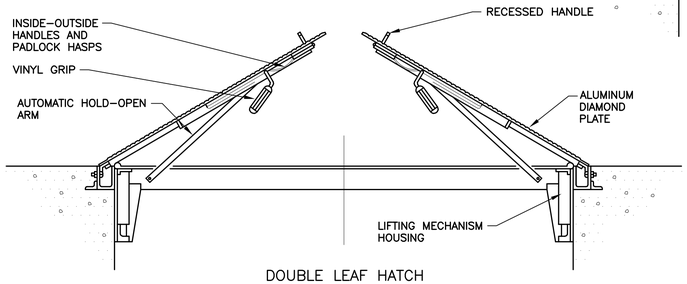

REACTION TYPE PIPE SUPPORT (944)




EXTERIOR HATCH DRAIN




SINGLE LEAF HATCH




DOUBLE LEAF HATCH

HATCH NOTES

1. ALUMINUM HATCHES TO BE SUPPLIED WITH STAINLESS STEEL HARDWARE.
2. ALL HATCHES TO BE SUPPLIED WITH SAFETY CHAINS. CORNER POST WITH FLOOR INSERTS MUST ALSO BE PROVIDED FOR SINGLE LEAF HATCHES.

| HATCH SCHEDULE | | | | | |
|---|---|---|---|---|---|
| NO. | LOCATION | SIZE | LEAF | DRAIN | REMARKS |
| 1* | VALVE VAULT | 4'-0" X 8'-0" | DOUBLE | YES | PROVIDE 6" CURB TO PREVENT INFILTRATION OF RAINWATER |
| 2* | VALVE VAULT | 3'-6" X 8'-0" | DOUBLE | YES | PROVIDE 6" CURB TO PREVENT INFILTRATION OF RAINWATER |
| 3* | WET WELL | 4'-6" X 11'-0" | SINGLE | YES | PROVIDE 6" CURB TO PREVENT INFILTRATION OF RAINWATER |
| | | | | | |

* SEE NOTE 1 ON SHEET M-1

TYPICAL HATCH DETAILS AND SCHEDULE (964)

ENGINEER
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DRAWN BY: ENG.
DATE: FEB., 2006
DESIGNED BY: WW2011
SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|
| | | | | |

NOT FOR CONSTRUCTION OR BID

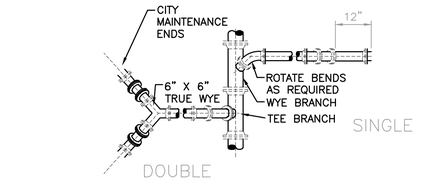
PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

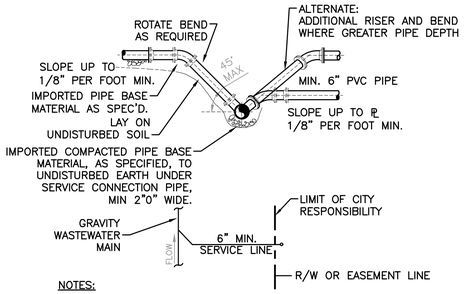
SHEET NO. X-1 OF XX

TOTAL: 0

CAD FILE: XXXXX-XXX-XXX0000

DRAWING FILE NO. 4-XXX-XX

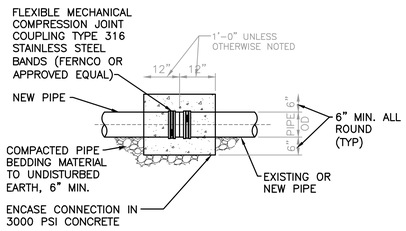


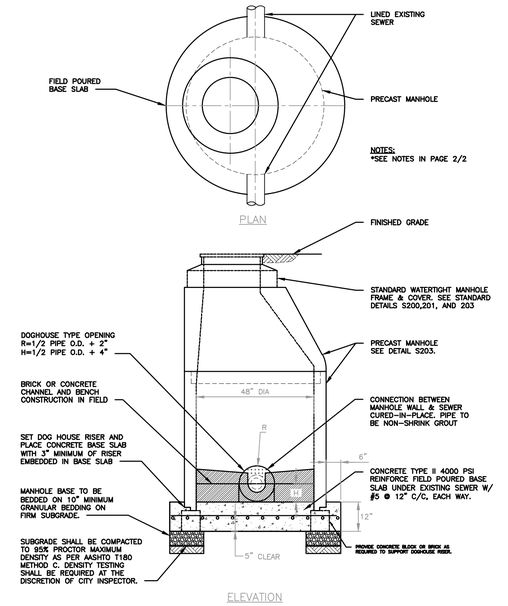

NOTES:

1. WASTEWATER MAIN WYE BRANCH TO MATCH MAIN PIPE MATERIAL.
2. NO 90° BENDS SHALL BE USED FOR WASTEWATER SERVICE AND CLEANOUT INSTALLATIONS.
3. SERVICE LATERALS SHALL TERMINATE AT 12" INSIDE THE PROPERTY LINE AT A DEPTH OF 3 FEET EXCEPT WHERE A DEEPER INVERT IS REQUIRED BY EXISTING BUILDING CONDITIONS.

208 TYPICAL WASTEWATER SERVICE CONNECTION
N.T.S.




211 JOINT FOR DISSIMILAR GRAVITY SEWER PIPE
N.T.S.




NOTES: ABANDONMENT OF EXISTING WASTEWATER SERVICE CONNECTIONS.

1. EXISTING SEWER LATERAL CONNECTIONS TO BE ABANDONED AS PART OF NEW CONSTRUCTION AND TO BE REPLACED WITH NEW CONNECTIONS MUST BE SEALED OFF USING SECTIONAL CURED-IN PLACE (CIP) LINERS.
2. CIP LINER CONTRACTOR MUST BE DULY LICENSED BY BROWARD COUNTY, FLORIDA AND CERTIFIED BY THE EQUIPMENT MANUFACTURER AND/OR ITS AUTHORIZED REPRESENTATIVE TO PERFORM SUCH INSTALLATIONS.

NOTES: INSTALLATION OF NEW WASTEWATER SERVICE CONNECTIONS

3. NEW WASTEWATER SERVICE CONNECTIONS SHALL BE CONSTRUCTED BY INSTALLING A LMT(TM) (LINED MAIN TAP) SADDLE INSTALLATION SYSTEM ENGINEERED TO CONNECT A LATERAL SERVICE PIPE TO A LINER INSIDE A REHABILITATED MAINLINE (LMK TECHNOLOGIES OR APPROVED EQUAL). TO BE INSTALLED PER MANUFACTURER INSTRUCTIONS.
4. CLEANOUT MUST BE PROVIDED PER STANDARD DETAIL S209.
5. CONTRACTOR SHALL PERFORM POST CCTV INSPECTION FOR NEW WASTEWATER SERVICE CONNECTION. SUBMIT COPY OF CCTV FILE TO CITY'S DSD AND PW ENGINEERING STAFF FOR INSPECTION OF DEFECTS OR DISTORTION TO MAINLINER.

NOTES: INSTALLATION OF NEW PRECAST CONCRETE MANHOLE(S) BUILT OVER EXISTING CIP LINER.

6. ALL NEW MANHOLES MUST BE CONSTRUCTED PER STANDARD DETAIL S212 (P.1 of 2) BY EXCAVATING TO HOST PIPE ELEVATION.
7. REMOVE HOST PIPE MATERIAL (E.G. VCP) FROM AREA OF NEW DOG HOUSE MANHOLE INSTALLATION.
8. CONTRACTOR SHALL NOT COMPROMISE STRUCTURAL INTEGRITY OF THE CIP LINER
9. CONTRACTOR SHALL PROPERLY SEAL CONNECTIONS BETWEEN DOG HOUSE MANHOLE AND CIP LINER TO AVOID INFILTRATION AND INFLOW CONTRIBUTION TO THE CITY'S COLLECTION SYSTEM PER STANDARD DETAIL S212 (P.1 of 2).
10. MANHOLE BENCH SHALL BE CONSTRUCTED TO INCORPORATE THE BOTTOM HALF OF THE CIP LINER AS PART OF THE MANHOLE TROUGH.
11. UPON FINAL CONSTRUCTION AND CURING OF THE MANHOLE BENCH THE INSIDE OF THE MANHOLE SHALL BE LINED UTILIZING SPRAY APPLIED POLYMERIC (EPOXY AND URETHANE) RESINS. RAVEN LINING SYSTEMS, IET COATING (PAINTS AND COATINGS, INC.) OR APPROVED EQUAL MUST BE UTILIZED.
12. ALL NEW DOGHOUSE MANHOLE INSTALLATIONS MUST BE INSPECTED BY CITY INSPECTORS WHO SHALL WITNESS ALL PHASES OF CONSTRUCTION.
13. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE POST CCTV INSPECTION OF MAINLINE/ MANHOLE INTERCONNECTIONS.
14. QUALITY OF CCTV INSPECTION FILES MUST CLEARLY SHOW SUCH INTERCONNECTION IN ORDER TO EVALUATE AND APPROVE. CONTRACTOR SHALL SUBMIT A COPY OF CCTV FILE TO DSD AND PW ENGINEERING STAFF FOR REVIEW AND APPROVAL.

DSD = DEPARTMENT OF SUSTAINABLE DEVELOPMENT

PW = PUBLIC WORKS

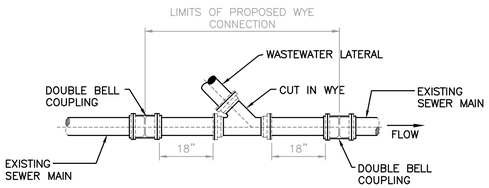
212 PRECAST CONCRETE MANHOLE BUILT OVER EXISTING CURED IN PLACE LINED SEWER PIPE
N.T.S.

NOT FOR CONSTRUCTION OR BID

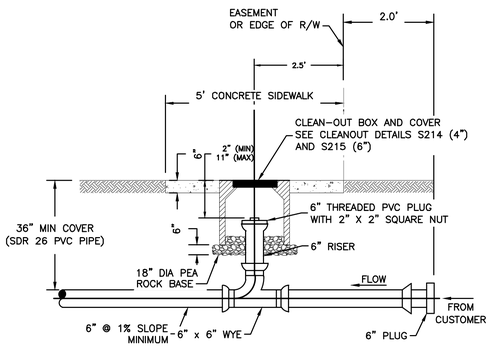
ENGINEER: #Name
REG. No: #NO.
DATE: #DATE
TEL: #Tel
FAX: #Fax

DRAWN BY: | DATE: MM/DD/YY
DESIGNED BY: | SCALE:
CHECKED BY:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

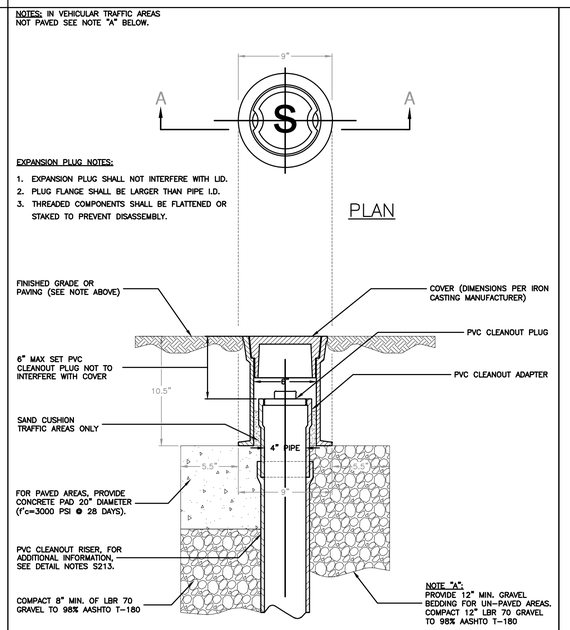



210 NEW LATERAL ON EXISTING GRAVITY WASTEWATER MAIN
N.T.S.

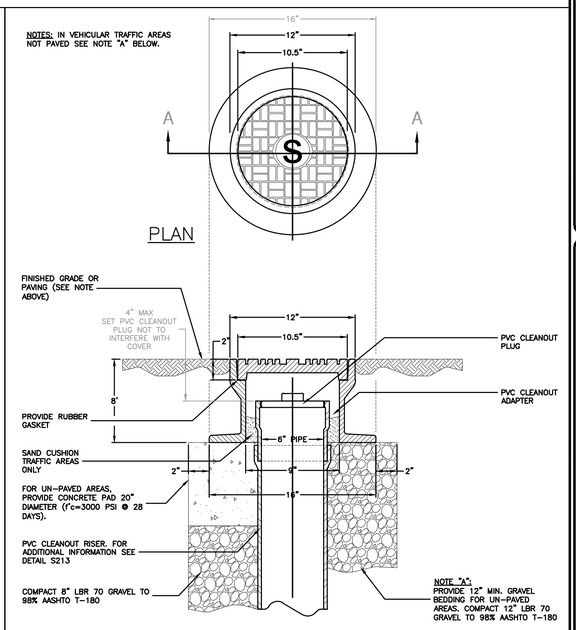



1. THE CLEAN OUT SHALL BE INSTALLED IN THE MIDDLE OF THE SIDEWALK. THIS DIMENSION WILL VARY DEPENDING UPON THE WIDTH OF THE SIDEWALK. 2.5' APPLIES TO 5' SIDEWALK WIDTH. IF SIDEWALKS DO NOT EXIST, THE CLEAN OUT SHALL BE INSTALLED 2.5' FROM THE RIGHT OF WAY LINE.
2. A NEW SECTION OF SIDEWALK SHALL BE POURED AROUND THE CLEAN-OUT BOX WHEN WORKING IN AN AREA WITH EXISTING SIDEWALKS.
3. IN GRASS AREA USE 24"x24" OR 24" DIAMETER CONCRETE COLLAR. SEE DETAILS S214 AND S215 FOR 4 AND 6 INCH CLEAN-OUT.

213 SANITARY SERVICE CONNECTION AT PROPERTY LINE OR EASEMENT LINE (PROFILE)
N.T.S.




214 CLEAN-OUT COVER ASSEMBLY FOR 4-INCH CLEANOUTS
N.T.S.




215 CLEAN-OUT COVER ASSEMBLY FOR 6-INCH CLEANOUTS
N.T.S.

REVISIONS

| NO. | DATE | BY | CHK'D | DESCRIPTION |
|---|---|---|---|---|
| | | | | |

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO.
SSWR02

TOTAL: 0

CAD FILE: FTLAUD-SSWR02

DRAWING FILE NO. 4-XXX-XX

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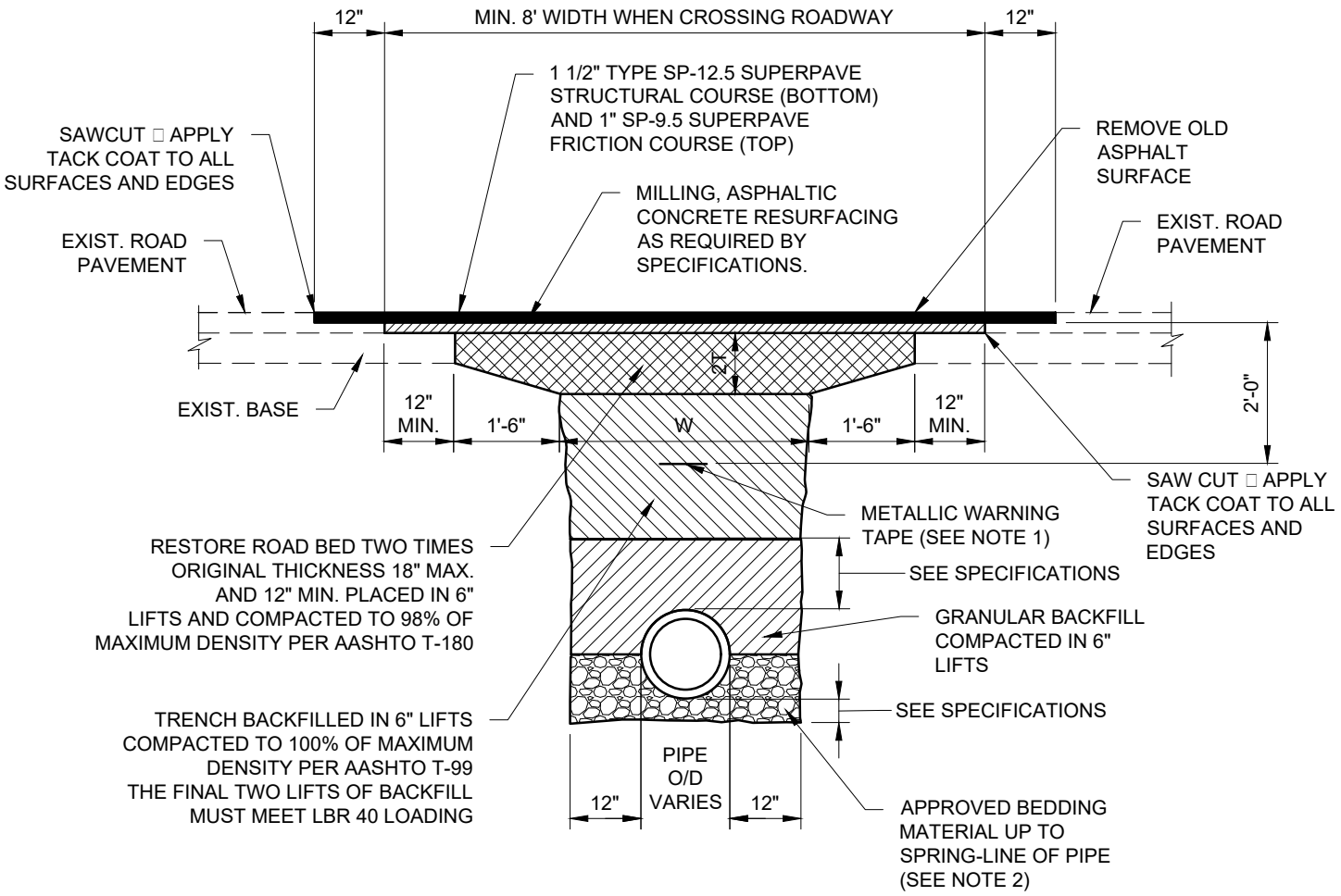



NOTES:

1. METALLIC WARNING TAPES SHALL BE INSTALLED 24" BELOW FINISH GRADE ABOVE MAIN. (SEE SPECIFICATION 2320 SECTION 3.6 FOR MARKING TYPE)
2. UNLESS OTHERWISE SPECIFIED SELECTED MATERIAL SHALL BE FREE OF STONES LARGER THAN 3/8" DIA.
3. REPLACE ALL LANE MARKINGS AND REFLECTIVE MARKERS.

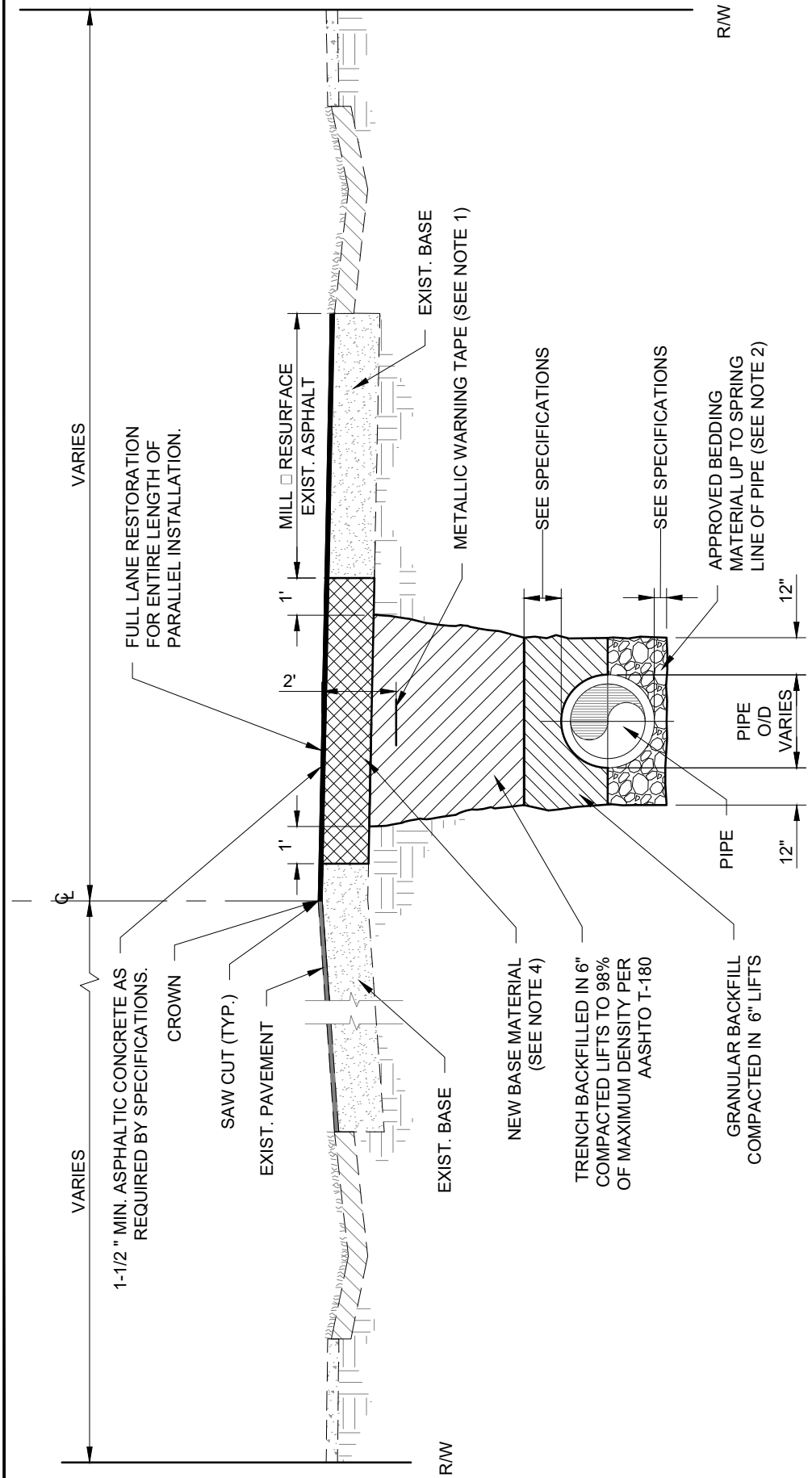
T□6" PARKING
T□8" RESIDENTIAL STREETS
T□10" MAJOR STREETS (4 LANE)
T□12" MAJOR STREETS (6 LANE)

2T□18" MAX. 12" MIN.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
700 NW 19th Avenue, Fort Lauderdale, Florida 33301

TYPICAL TRENCH AND PAVEMENT
RESTORATION FOR TRANSVERSE PIPE CROSSING
SHEET 1

DETAIL NO.
ROAD 001
REVISED:
2017/03/13



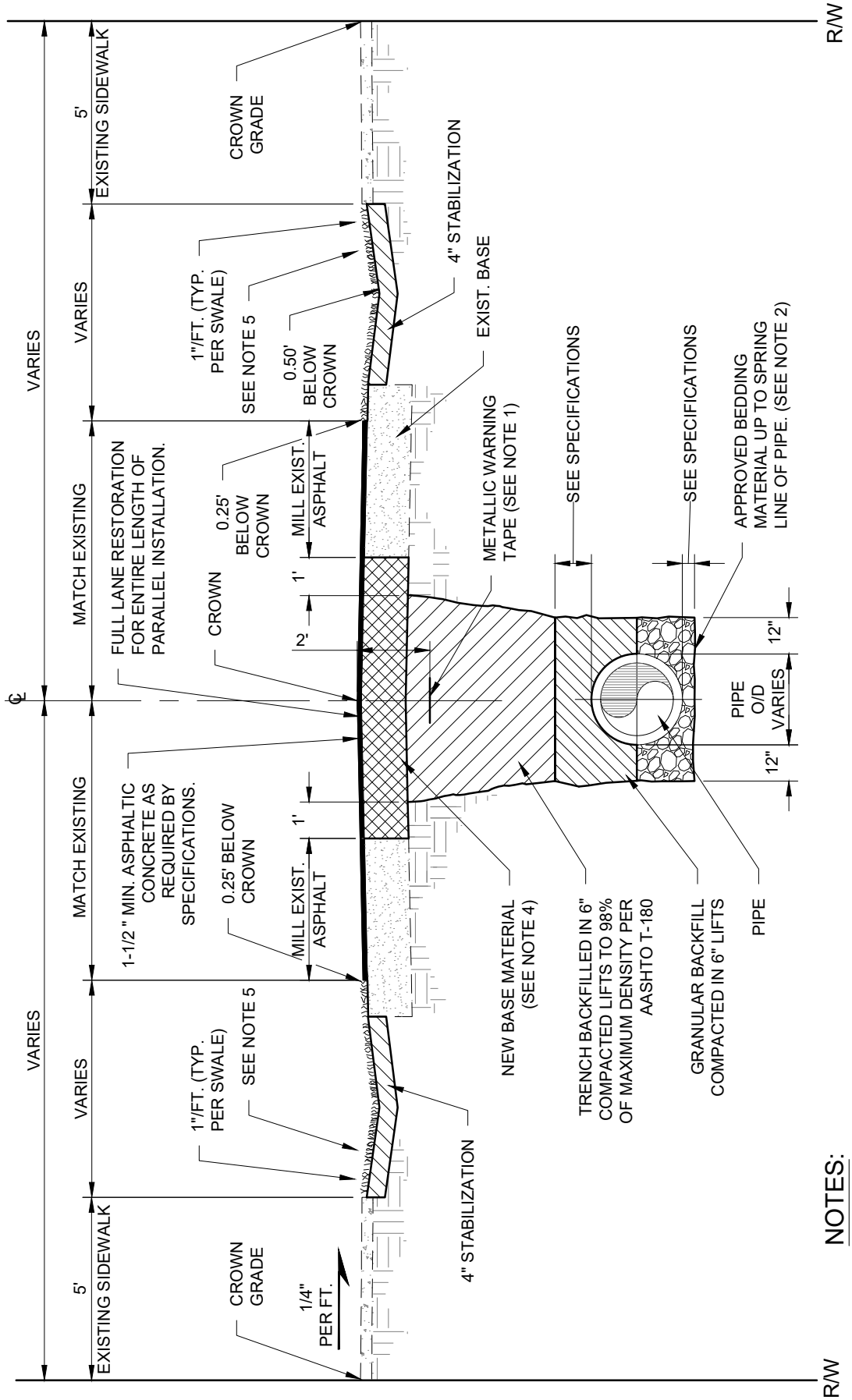

NOTES:

1. 2" WIDE METALLIC WARNING TAPES SHALL BE INSTALLED 24" BELOW FINISH GRADE.
2. UNLESS OTHERWISE SPECIFIED SELECTED MATERIAL SHALL BE FREE OF STONES LARGER THAN 3/8" DIA.
3. REPLACE ALL LANE MARKINGS AND REFLECTIVE MARKERS.
4. 12" MIN. LIMEROCK BASE PLACED IN 6" LAYERS AND COMPACTED TO 98% OF MAXIMUM DENSITY PER AASHTO T-180.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
700 NW 19th Avenue, Fort Lauderdale, Florida 33301

TYPICAL ROAD SECTION, TYPICAL TRENCH AND TRENCH RESTORATION FOR PARALLEL PIPE TRENCH
SHEET 2

DETAIL NO.
ROAD
002
REVISED:
2017/08/14



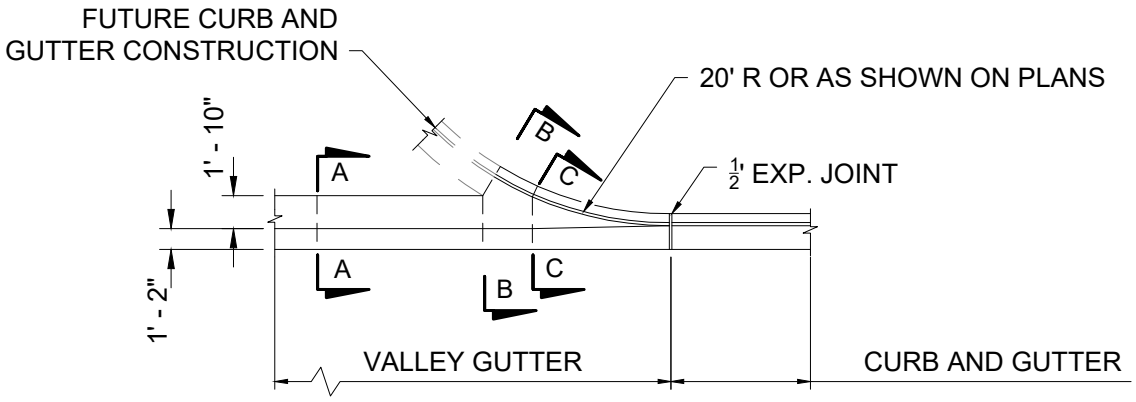

## NOTES:

1. 2" WIDE METALLIC WARNING TAPES SHALL BE INSTALLED 24" BELOW FINISH GRADE. DOES NOT APPLY TO STORM DRAINAGE PIPE INSTALLATION.
2. UNLESS OTHERWISE SPECIFIED SELECTED MATERIAL SHALL BE FREE OF STONES LARGER THAN 3/8" DIA.
3. REPLACE ALL LANE MARKINGS AND REFLECTIVE MARKERS.
4. 12" MIN. LIMEROCK BASE PLACED IN 6" LAYERS AND COMPACTED TO 98% OF MAXIMUM DENSITY PER AASHTO T-180
5. BAHIA SOD -OR- ST. AUGUSTINE "FLORITAM" SOD IN PREVIOUSLY SODDED AREAS -OR- REPLACE EXISTING IMPROVED SURFACE (□g., ROCK OR ASPHALT PAVING TO MATCH EXISTING -IF ASPHALT, MINIMUM 1" ASPHALT OVER MINIMUM 6" COMPACTED LIMEROCK)

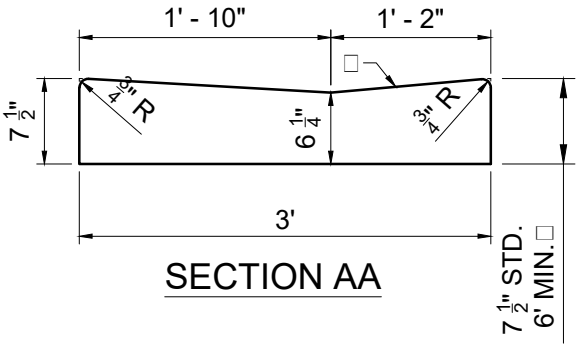
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

# TYPICAL ROAD SECTION, TYPICAL TRENCH, PAVEMENT AND SWALE RESTORATION FOR PARALLEL PIPE TRENCH
SHEET 3

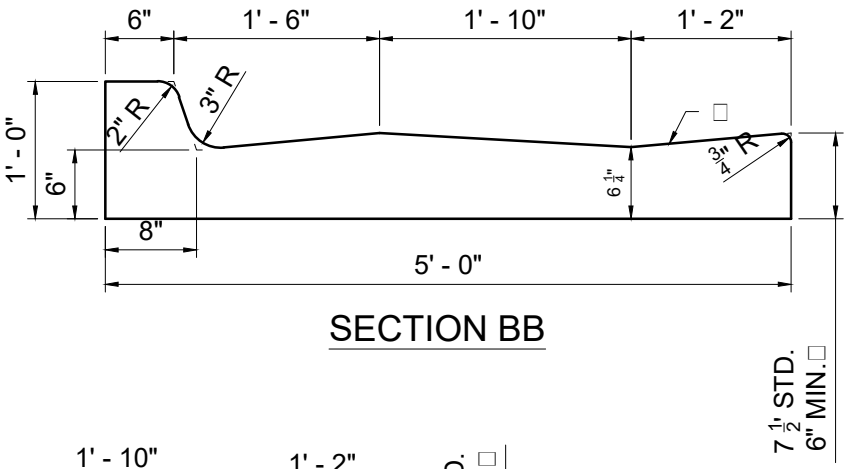
DETAIL NO.
ROAD 003
REVISED:
2017/08/07



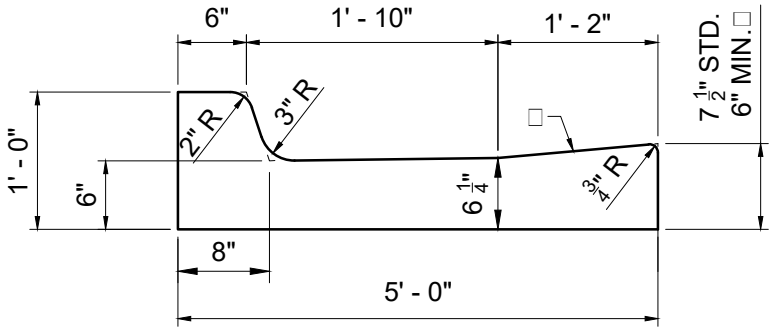

PLAN




SECTION AA



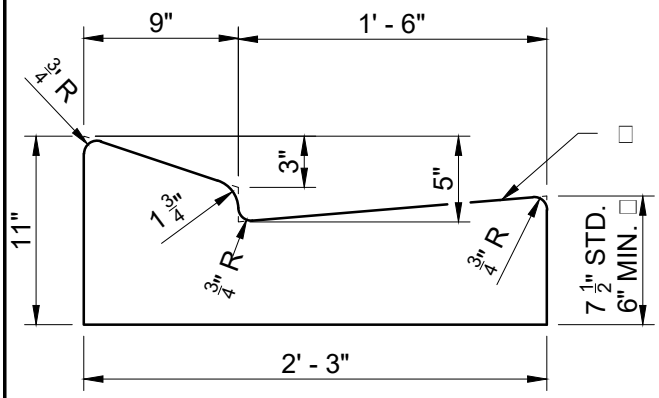

SECTION BB



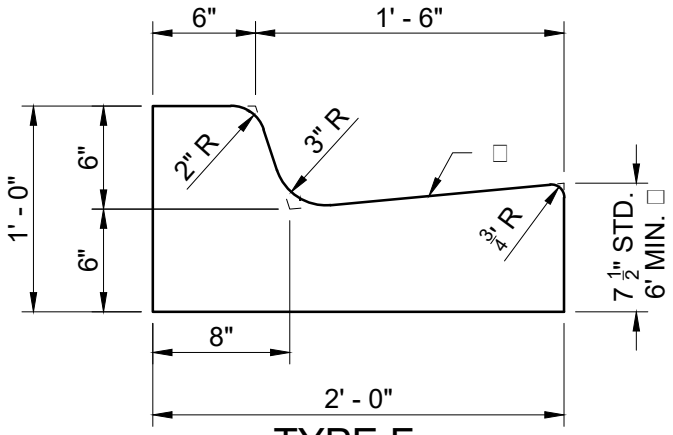

SECTION CC

## NOTES:

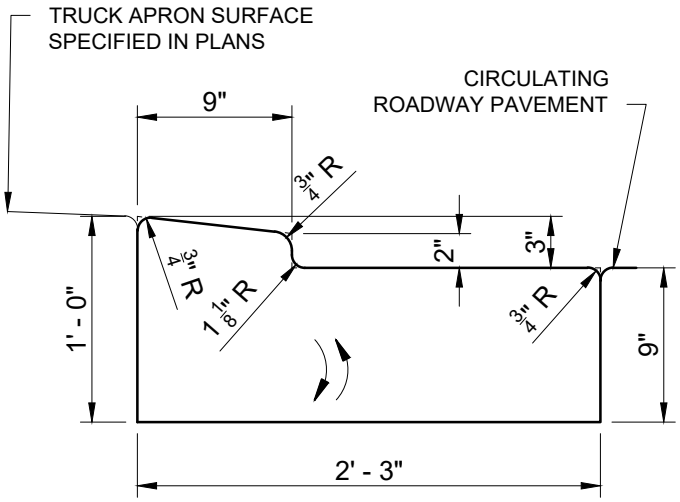
1. WHEN USED ON HIGH SIDE OF ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT. THE THICKNESS OF THE LIP SHALL BE 6", UNLESS OTHERWISE SHOWN ON PLANS.
2. ROTATE ENTIRE SECTION SO THAT GUTTER CROSS SLOPE MATCHES SLOPE OF ADJACENT CIRCULATING ROADWAY PAVEMENT.
3. FOR USE ADJACENT TO CONCRETE OR FLEXIBLE PAVEMENT. FOR DETAILS DEPICTING USAGE ADJACENT TO FLEXIBLE PAVEMENT, SEE SHEET 2. EXPANSION JOINT, PREFORMED JOINT FILLER AND JOINT SEAL ARE REQUIRED BETWEEN CURB □ GUTTER AND CONCRETE PAVEMENT ONLY, SEE SHEET 2.
4. 4" CURB PAD (LBR 100, 98% COMPACTION T-180) TO BE PLACED UNDER CURB AND GUTTER, AND EXTEND 6" BEYOND OUTSIDE EDGE OF CURB. SEE SPECIFICATIONS FOR MATERIAL




TYPE E

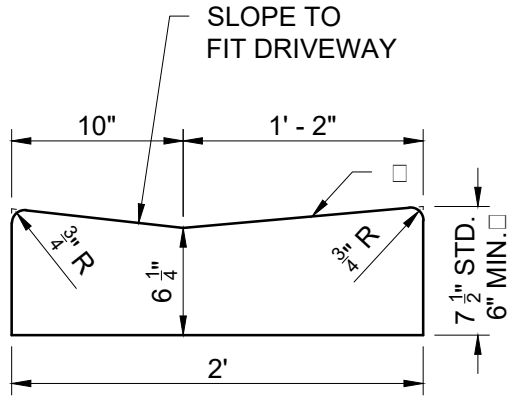



TYPE F

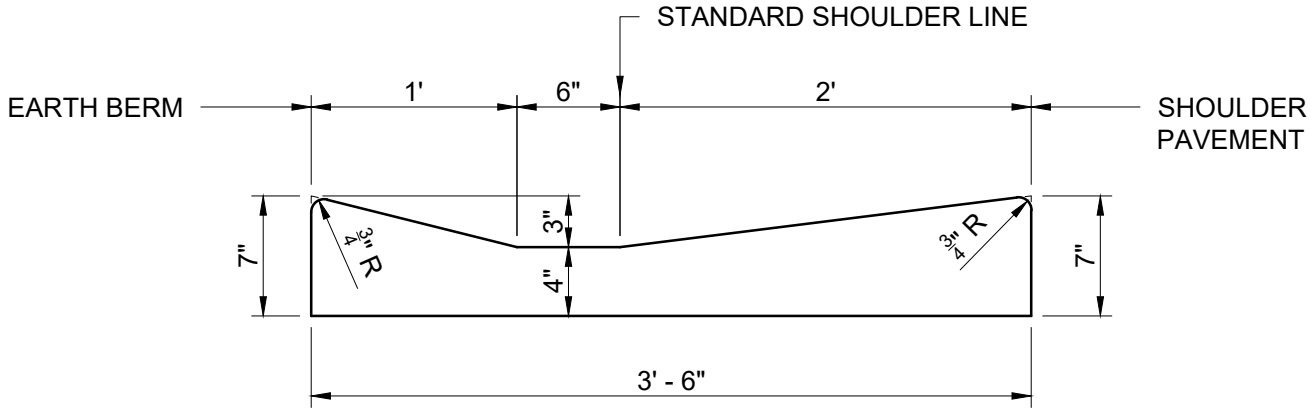



TRAFFIC BEARING SECTION FOR USE IN
ROUNDABOUT CENTRAL ISLAND CONSTRUCTION

TYPE RA




DROP CURB




SHOULDER GUTTER

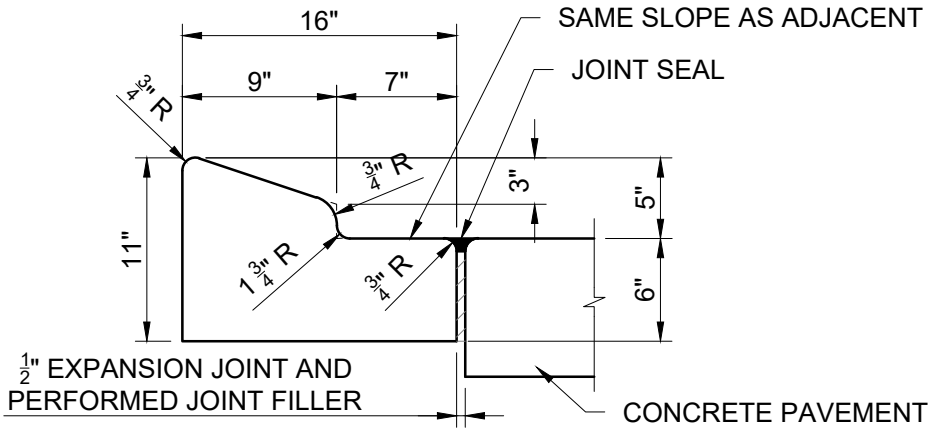
NOTE:

4" CURB PAD (LBR 100, 98% COMPACTION T-180) TO BE PLACED UNDER CURB AND GUTTER, AND EXTEND 6" BEYOND OUTSIDE EDGE OF CURB. SEE SPECIFICATIONS FOR MATERIAL

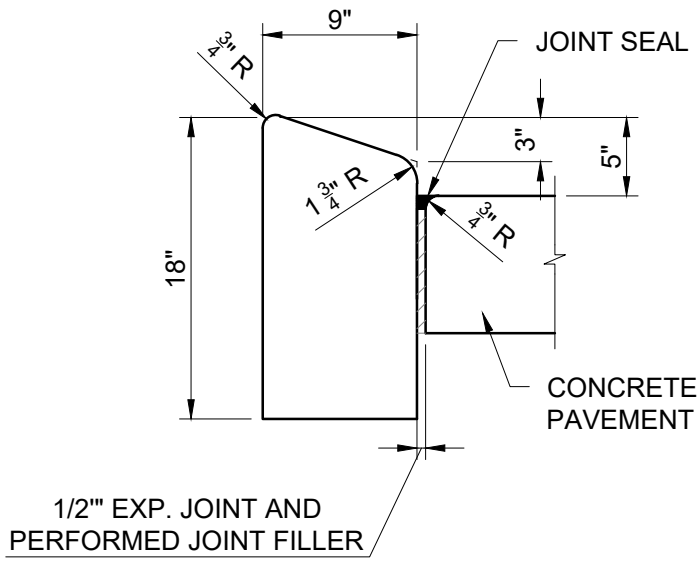
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
[illegible] Avenue, Fort Lauderdale, Florida 33301

CONCRETE CURB AND GUTTER
TYPE E, TYPE F, TYPE RA, DROP CURB, AND SHOULDER GUTTER
SHEET 2

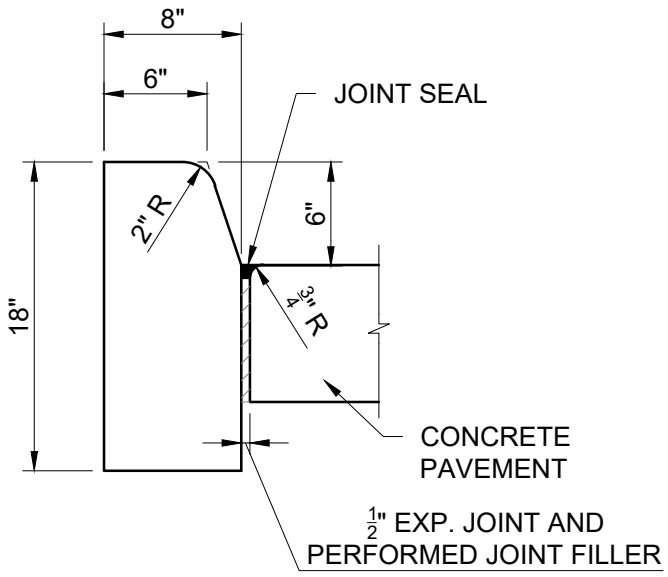
DETAIL NO.
ROAD
006
REVISED:
2017/08/14




## TYPE A



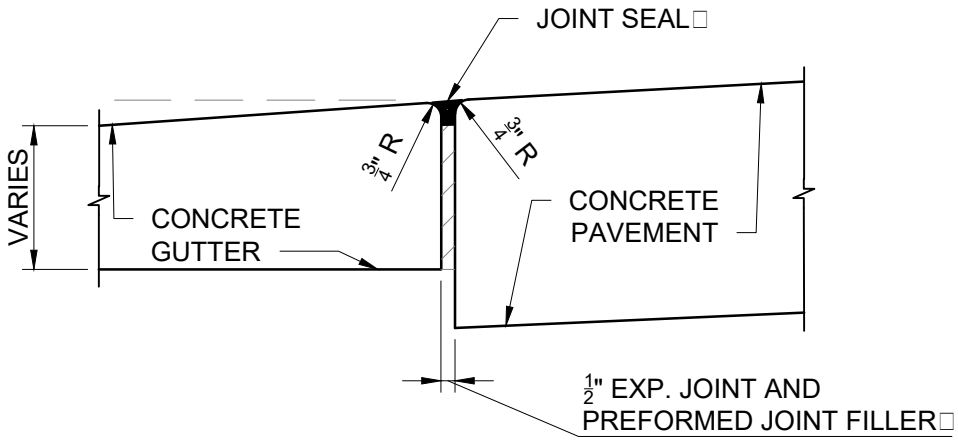

## TYPE B



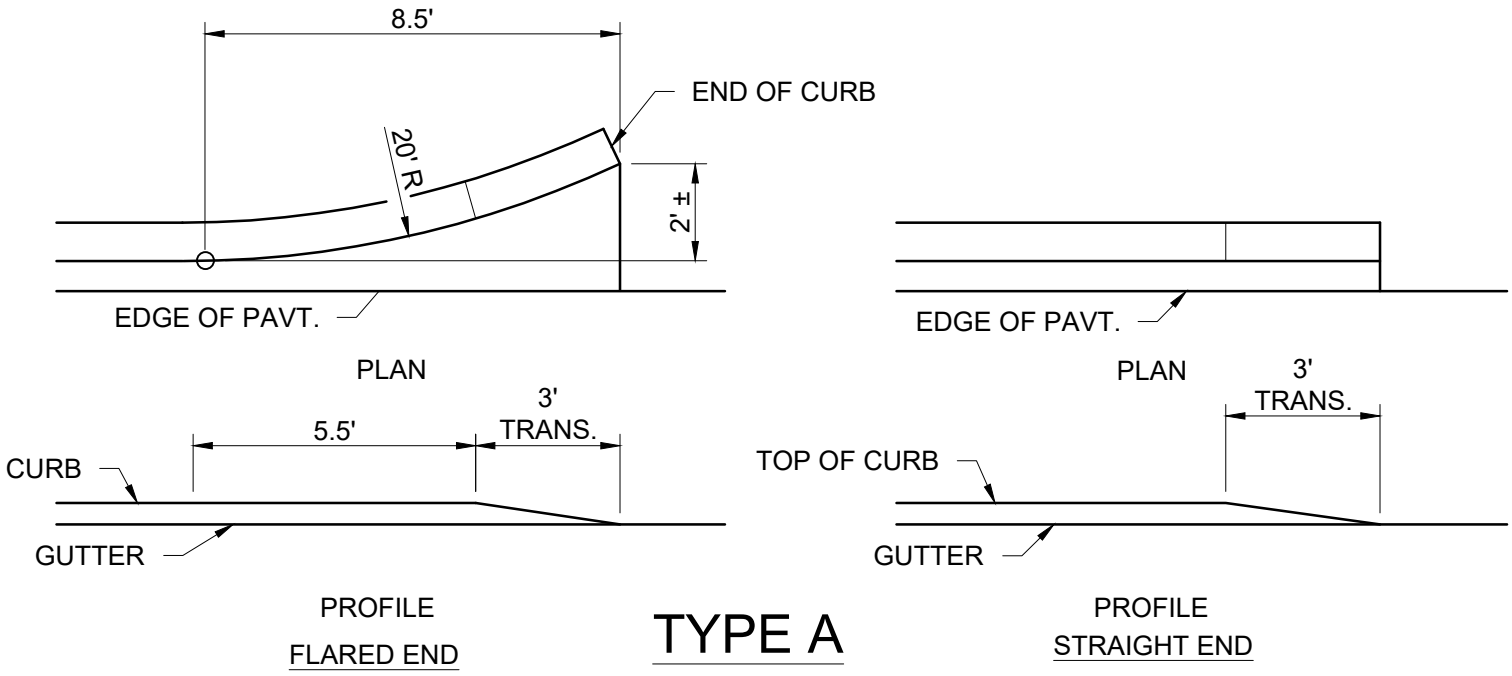

## TYPE D

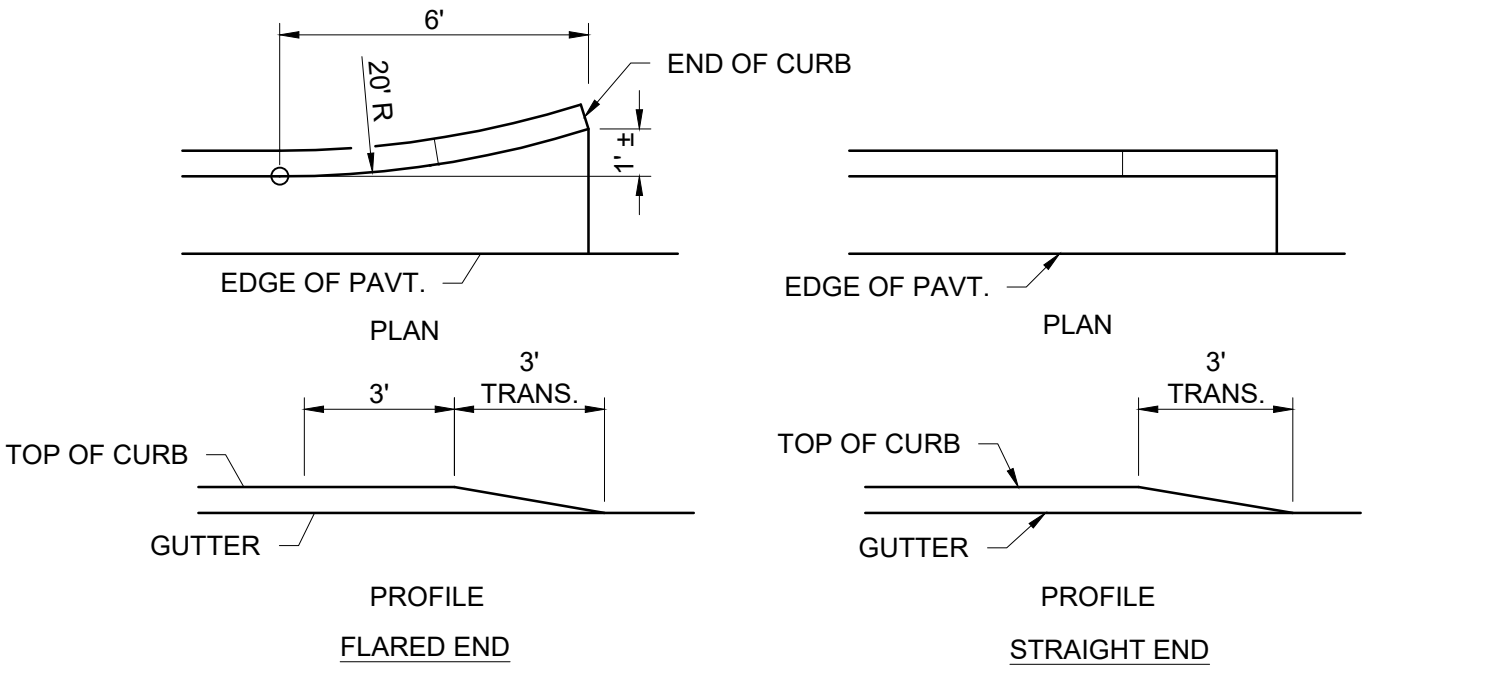
## NOTES:

1. FOR USE ADJACENT TO CONCRETE OR FLEXIBLE PAVEMENT, CONCRETE SHOWN. EXPANSION JOINT, PREFORMED JOINT FILLER AND JOINT SEAL ARE REQUIRED BETWEEN CURBS AND CONCRETE PAVEMENT ONLY.
2. 4" CURB PAD (LBR 100, 98% COMPACTION T-180) TO BE PLACED UNDER CURB AND GUTTER, AND EXTEND 6" BEYOND OUTSIDE EDGE OF CURB. SEE SPECIFICATIONS FOR MATERIAL




* APPLIES TO BOTH HIGH AND LOW SIDES OF PAVEMENT, LOW SIDE SHOWN.




# TYPES E □ F

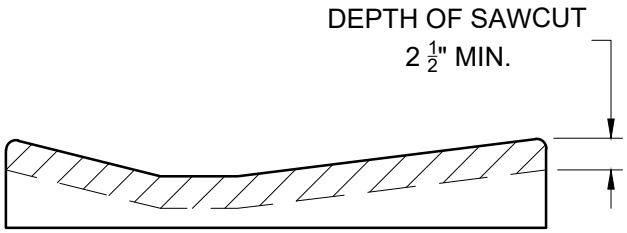
## NOTES:

1. FOR CURB, GUTTER AND CURB □ GUTTER PROVIDE ⅛" - ¼" CONTRACTION JOINTS AT 10' CENTERS (MAX.). CONTRACTION JOINTS ADJACENT TO CONCRETE PAVEMENT ON TANGENTS AND FLAT CURVES ARE TO MATCH THE PAVEMENT JOINTS, WITH INTERMEDIATE JOINTS NOT TO EXCEED 10' CENTERS. CURB, GUTTER AND CURB □ GUTTER EXPANSION JOINTS SHALL BE LOCATED IN ACCORDANCE WITH SECTION 520 OF THE STANDARD SPECIFICATIONS.
2. ENDS OF CURBS TYPES B AND D SHALL TRANSITION FROM FULL TO ZERO HEIGHTS IN 3'.

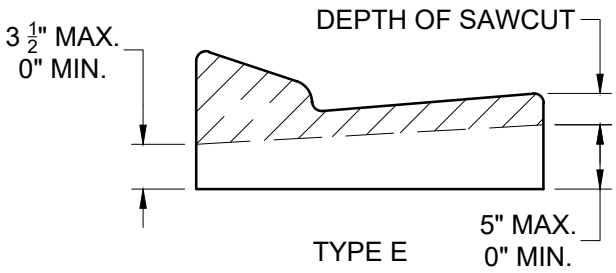
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
700 NW 19th Avenue, Fort Lauderdale, Florida 33301

CONCRETE CURB AND GUTTER
CURB AND GUTTER ENDINGS
SHEET 5

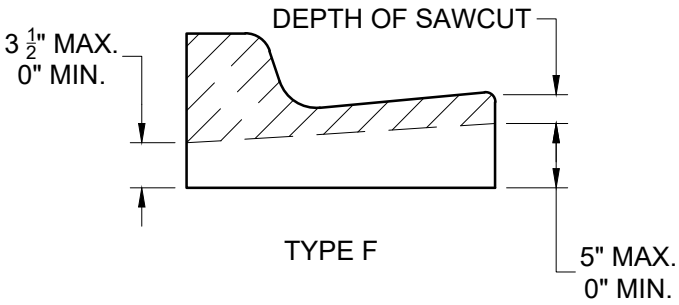
DETAIL NO.
ROAD
009
REVISED:
2017/03/13




SHOULDER GUTTER




TYPE E

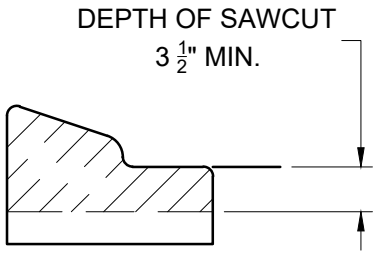



TYPE F

SAWCUTS SHOULD BE AVOIDED WITHIN VALLEY GUTTER AND WITHIN CURB AND GUTTER ENDINGS.

## NOTES:

1. FOR CURB, GUTTER AND CURB □ GUTTER PROVIDE ⅛" - ¼" CONTRACTION JOINTS AT 10' CENTERS (MAX.). CONTRACTION JOINTS ADJACENT TO CONCRETE PAVEMENT ON TANGENTS AND FLAT CURVES ARE TO MATCH THE PAVEMENT JOINTS, WITH INTERMEDIATE JOINTS NOT TO EXCEED 10' CENTERS. CURB, GUTTER AND CURB □ GUTTER EXPANSION JOINTS SHALL BE LOCATED IN ACCORDANCE WITH SECTION 520 OF THE STANDARD SPECIFICATIONS.
2. ENDS OF CURBS TYPES B AND D SHALL TRANSITION FROM FULL TO ZERO HEIGHTS IN 3'.

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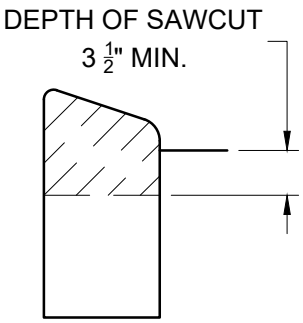


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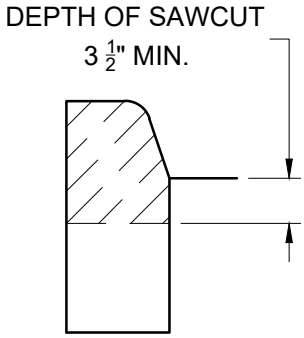
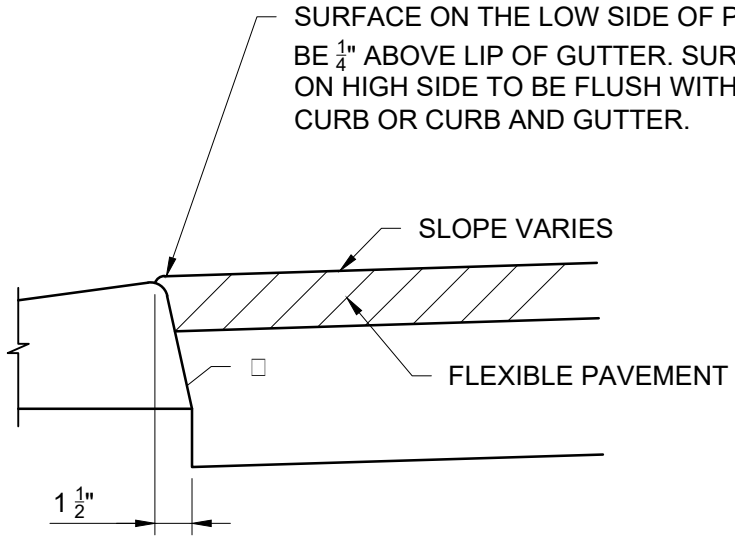



TYPE D



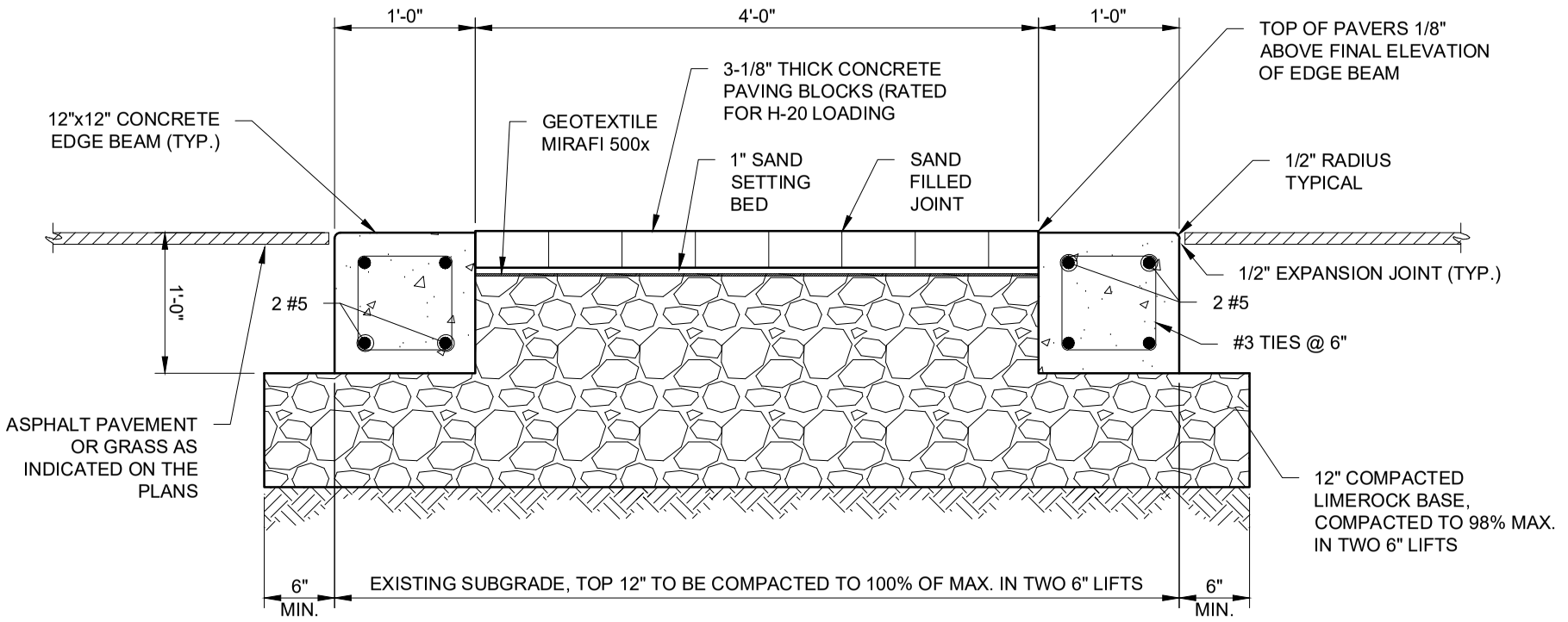

□APPLIES TO BOTH HIGH AND LOW SIDES OF PAVEMENT, LOW SIDE SHOWN.
APPLIES TO SHOULDER GUTTER ONLY WHERE ADJOINING TRAFFIC LANES.

## NOTES:

1. FOR CURB, GUTTER AND CURB □ GUTTER PROVIDE ⅛" - ¼" CONTRACTION JOINTS AT 10' CENTERS (MAX.). CONTRACTION JOINTS ADJACENT TO CONCRETE PAVEMENT ON TANGENTS AND FLAT CURVES ARE TO MATCH THE PAVEMENT JOINTS, WITH INTERMEDIATE JOINTS NOT TO EXCEED 10' CENTERS. CURB, GUTTER AND CURB □ GUTTER EXPANSION JOINTS SHALL BE LOCATED IN ACCORDANCE WITH SECTION 520 OF THE STANDARD SPECIFICATIONS.
2. ENDS OF CURBS TYPES B AND D SHALL TRANSITION FROM FULL TO ZERO HEIGHTS IN 3'.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
Avenue, Fort Lauderdale, Florida 33301






## NOTES:

1. CONTRACTOR SHALL GIVE SPECIAL ATTENTION TO ACHIEVE COMPACTION REQUIREMENTS AT AREAS ADJACENT TO EDGE RESTRAINTS, CATCH BASINS, AND UTILITY STRUCTURES.

2. CONTRACTOR SHALL FORM THE INTENDED SURFACE PROFILE OF THE BASE SO THAT THE PAVERS CAN BE PLACED ON A UNIFORM THICKNESS OF BEDDING SAND.

3. SURFACE OF COMPACTED BASE SHALL BE SMOOTH WITH A SURFACE SMOOTHNESS MAXIMUM TOLERANCE OF ± 3/8" OVER A 10' STRAIGHTEDGE. UNEVEN AREAS OF THE LIMEROCK BASE SURFACE MUST BE MADE LEVEL PRIOR TO PLACING THE BEDDING SAND. BEDDING SAND SHALL NOT BE USED TO COMPENSATE FOR AN UNEVEN BASE.

4. CONTRACTOR SHALL ENSURE THAT ALL SURROUNDINGS CONTAINING EDGES, AND COMPACTED BASE ARE COMPLETED PRIOR TO INITIATING PAVER INSTALLATION.

5. BEDDING SAND SHALL CONFORM TO ASTMC33 (CONCRETE SAND) WITH O% PASSING No. 200 SIEVE. SPREAD BEDDING SAND AT OPTIMUM MOISTURE CONTENT EVENLY OVER BASE AND SCREED SAND TO AN EVEN THICKNESS OF 1" (± 3/16"). THE SCREEDED SAND SHALL NOT BE DISTURBED.

6. LAY PAVERS IN THE PATTERN INDICATED. MAINTAIN STRAIGHT JOINT LINES. JOINTS BETWEEN PAVERS SHALL BE CONSISTENT AND BETWEEN 1/16 TO 1/8 INCH WIDE.

7. AFTER AN AREA OF PAVERS ARE PLACED, IT SHALL BE COMPACTED WITH A VIBRATING PLATE COMPACTOR, EXERTING 5000 LBS. OF CENTRIFUGAL COMPACTION FORCE, WITH SURFACE CLEAN AND JOINTS UNSANDED. A MINIMUM OF THREE PASSES SHALL BE MADE. PLATE VIBRATOR SHALL HAVE A RUBBER MAT OR ROLLER FEET TO AVOID CHIPPING THE PAVERS.

8. JOINT SAND SHALL BE FINER THAN THE BEDDING SAND TO FACILITATE FILLING OF THE JOINTS. THIS CAN BE OBTAINED BY PASSING THE BEDDING SAND THROUGH A No. 8 SIEVE. AFTER THE FIRST PASS OF THE PLATE COMPACTOR, DRY JOINT SAND SHALL BE SWEPT INTO THE JOINTS AND THE PAVERS COMPACTED, REPEAT THE PROCESS UNTIL THE JOINT ARE FILLED WITH SAND. WET SAND SHALL NOT BE INSTALLED.

9. CONTRACTOR SHALL LEAVE TOP OF PAVERS 1/8" ABOVE FINAL ELEVATION TO COMPENSATE FOR POSSIBLE MINOR SETTLING.

10. ALL CUTS TO BE VERTICAL AND TRUE, NO EDGE PIECE TO BE SMALLER THAN 1/3 FULL PAVER SIZE.

11. GEOTEXTILE WOVEN MIRAFI 500X. FABRIC SHALL BE INSTALLED WITHOUT WRINKLES AND LAPPED 3" AT THEIR EDGES.

DECORATIVE PAVERS IN ROADWAY

DETAIL NO. ROAD 039

REVISED: 2017/08/31

# EXHIBIT 25A, BROWARD COUNTY ADMINISTRATIVE CODE

# MINIMUM STANDARDS

## Applicable to Public Right-of-Way Under Broward County, Florida Jurisdiction

PUBLIC WORKS AND TRANSPORTATION DEPARTMENT
Highway Construction and Engineering Division

October 25, 2005

# EXHIBIT 25A, BROWARD COUNTY ADMINISTRATIVE CODE

# MINIMUM STANDARDS
## APPLICABLE TO PUBLIC RIGHT-OF–WAY UNDER BROWARD COUNTY, FLORIDA JURISDICTION

The “Minimum Standards Applicable to Public Right-of-Way Under Broward County Jurisdiction” has been developed and compiled by the Engineering Division of the Broward County, Florida, Department of Public Works under the authority granted to the Broward County Board of County Commissioners by Ordinance Number 85-74, adopted by the Board on November 2, 1985, and included in Sections 21-18 through 21-23 of the Broward County Code.

The “Minimum Standards,” as it is also known, was attached to and made part of Resolution Number 85-3606, Item 14B, adopted by the Broward County Board of County Commissioners on November 12, 1985, concurrently with Ordinance Number 85-74.

The “Minimum Standards” became effective on December 1, 1985.

The first revision was adopted on March 14, 1995, under Resolution Number 95-224, Item 41, effective April 15, 1995.

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# TITLE AND INTENT

**1. TITLE**: This body of regulations shall be known as the "Minimum Standards Applicable to Public Right-of-Way under Broward County Jurisdiction," and may be referred to as the "Minimum Standards," as is done hereinafter. These Minimum Standards shall apply to both existing and proposed public right-of-way, as defined herein, under Broward County jurisdiction.

## 2. INTENT

*2.1 Intent of the Minimum Standards*: The intent of the "Minimum Standards" is to provide for the safe and orderly use and development of public right-of-way under Broward County jurisdiction, to the end that the needs and interests of the public are served as fully and efficiently as possible. The regulations embodied herein have been made as broad as possible to serve as standards of quality to maintain the necessary uniformity in the utilization of the public traffic corridors, and are intended to express the minimum acceptable level. Those whose standards are higher are encouraged to follow them to the extent possible.

*2.2 Permit Issued Prior to the Effective Date of Minimum Standards:* Any permit issued prior to the effective date of these "Minimum Standards" shall be valid on the terms under which it was issued, except that such permit shall be subject to the provisions of Chapter 4, Sections 4-1 and 4-2 of this document.

## 3. APPLICATION TO EXISTING FACILITIES

*3.1 Application of Provisions of Minimum Standards to Existing Facilities:* With the exception of conditions described in Section 3.2 below, the provisions of the "Minimum Standards" do not apply to existing facilities in public right-of-way, but, except as otherwise approved, apply to any major alteration, extension or maintenance performed upon them from the effective date of these regulations, forward.

*3.2 Facility Within Public Right-of-way:* Any facility within public right-of-way that is found by the Highway Construction and Engineering Division to be interfering in any way with the convenient, safe or continuous use, or the maintenance, improvement, extension or expansion of any public road under Broward County jurisdiction shall be removed or relocated, as directed by the Highway Construction and Engineering Division, pursuant to Florida Statute 337.403.

# CHAPTER 1 – STANDARDS

1-1 Appendix D, lists by name, address and website address those agencies, associations, institutes, societies, etc., who are referred to in this document by name, initials or symbol.

1-2 The referenced Standards included in this document are intended to supplement, not supersede the requirements otherwise set forth herein and, in every case, the “latest revision” shall apply. Where differences occur between referenced Standards and the “Minimum Standards,” the more stringent shall apply.

1-3 In addition to the provisions of the referenced Standards stated to be mandatory, all recommendations in the referenced Standards shall also be considered mandatory.

1-4 The referenced Standards shall apply only to those portions of this document in which the referenced Standards appear. Where the referenced Standards appear to regulate other topics specifically covered by this document, such regulations shall not apply.

1-5 Only those portions of the referenced Standards shall apply, that are directly related to the purpose(s) of the subsection(s) of this document in which they are referenced. Where portions of referenced documents concern other, extraneous matters, such portions shall not be mandatory.

1-6 Where the method of installation of materials or equipment is not specified in this document, the installation shall be in accordance with the manufacturer's technical recommendations or specifications.

# CHAPTER 2 – DEFINITIONS

Whenever the following terms, or pronouns in place of them, appear in these standards, the intent and meaning shall be construed as follows:

*Approvals:* Where any term such as “approved,” “or equal,” “accepted,” “permitted” appears in this document, it shall be construed to mean “by” or “in the judgment of the Highway Construction and Engineering Division,” unless specifically noted otherwise.

*Arterial Roadway:* A general term denoting a highway primarily used by through traffic, usually on a continuous route or a highway designated as part of an arterial system.

*Board:* The Board of County Commissioners of Broward County, Florida.

*Clear Zone:* The unobstructed relatively flat area, impacted by construction extending outward from the edge of a travel lane to a fixed object, available for safe use by an errant vehicle.

*Collector Roadway:* A term denoting a highway that in rural areas connects local highways to arterial highways and in urban areas provides land access and traffic circulation within residential, commercial and business areas, and connects local highways to arterial highways.

*Contractor:* The person or entity, certified by the Broward County Central Examining Board for Engineered Construction Trades or by the Florida Construction Industry Licensing Board for the class of work to be performed and responsible for the work to be performed, or the utility company or governmental subdivision engaged in construction on its own facility using its own employees.

*County:* Broward County, Florida, a political subdivision of the State of Florida within which these standards apply, and in whose area of jurisdiction the work is to be performed.

*County Inspector:* An authorized representative of the County.

*Engineer:* The Engineer of Record, licensed by the State of Florida (or a representative of the Engineer of Record) whose plans and specifications have been approved by the Highway Construction and Engineering Division, for a specific project.

*EPD:* The Broward County Environmental Protection Department.

*FDOT:* The State of Florida, Department of Transportation.

*Green Book:* The State of Florida, Department of Transportation “Minimum Standards for Design, Construction and Maintenance of Streets and Highways,” as amended.

*Highway Construction and Engineering Division:* The Highway Construction and Engineering Division of the Broward County Public Works and Transportation Department.

*Maintenance Security:* An approved form of security furnished by the permittee as a guaranty of good faith that permittee shall perform any maintenance or repairs in accordance with the terms of the permit. This security shall remain in effect for one (1) year after the permitted work has been accepted by the Public Works and Transportation Department.

*Maintenance of Traffic (MOT) Plan:* A plan that denotes how vehicular and pedestrian traffic shall be maintained throughout a construction area.

*Material:* Materials incorporated in the project, or used or consumed in the performance of the work.

*Minimum Standards:* "Minimum Standards Applicable to Public Right-of-Way Under Broward County Jurisdiction" as adopted by the Broward County Board of County Commissioners, as amended.

*NGVD:* National Geodetic Vertical Datum.

*P.E.:* Professional Engineer, registered in the State of Florida.

*Permittee:* The person or entity to whom the permit to perform work in public right-of-way under Broward County Jurisdiction is issued.

*PSM:* Professional Surveyor and Mapper, registered in the State of Florida.

*Plans:* The plans approved by the Public Works and Transportation Department which show the location, character, dimensions, and details of the work to be done.

*Proposed Public Right-of-Way:* Land usually in a subdivision, to be developed prior to dedications and, upon completion, to be dedicated to the public, pursuant to a prior agreement between the developer and the County Commission.

*Public Right-of-Way/ Easements:* Public right-of-way/easements include:

1. Land, with the exception of State road right-of-way, dedicated or deeded, to the public and used or to be used for a roadway, alley, thoroughfare, walkway, bikeway, path, trail, access for ingress or egress, Mass Transit facilities or other related purpose by the public, as authorized by the governing body having jurisdiction
2. All easements dedicated to the public for discharge of storm water from County right-of-way

*Public Works and Transportation Department:* The Broward County Public Works and Transportation Department

*Qualified Applicant:* Any current County franchisee or utility regulated by the Florida

Public Service Commission, seeking permission to obstruct, or work in public right-of-way, on its own facilities, utilizing its own employees or;

Any person, or entity currently licensed to engage in contracting in Broward County and certified by the County Central Examining Board for Engineered Construction Trades or by the State Construction Industry Licensing Board to perform the class(es) of work in public right-of-way for which a permit is being sought or;

Any political subdivision of the State of Florida performing work in public right-of-way on its own facilities, using its own employees.

*Shop Drawings:* Drawings that show details pertaining to materials and facilities to be installed in conjunction with the project.

*Specifications:* The directions, provisions, and requirements contained in the plans or in the contract documents, setting out or relating to the method and manner of performing the work, and/or the quantities and qualities of materials and labor to be furnished under the contract.

*Standard Index:* FDOT “Design Standards”

*Subcontractor:* A person, firm or corporation currently licensed to engage in contracting in Broward County, who is certified by the Broward County Central Examining Board for Engineered Construction Trades or by the Florida Construction Industry Licensing Board for the class of work to be performed, and who is contracted to perform all or part of the work required under another Contractor's contract.

*Security:* A cashier’s check, certified check, irrevocable letter of credit, or cash accompanied by a Cash Security Agreement furnished by the permittee to guarantee contract performance and/or maintenance, in a form acceptable to the County.

*Swale:* A low-lying area located between the edge of pavement and a public right-of-way line of a roadway, which is used for the conveyance and/or retention of storm water run off within road right-of-way.

*Traffic Control Manuals:* The State of Florida, “Design Standards,” Index 600 series and FHWA “Manual on Uniform Traffic Control Devices” (MUTCD), as amended.

*Traffic Engineering Division:* The Traffic Engineering Division of the Broward County Public Works and Transportation Department.

*Traffic Engineering Standards and Specifications:* The standards and specifications maintained by the Broward County Traffic Engineering Division. This includes, but is not limited to: signage, pavement markings, signalization and all other Traffic Engineering related facilities.

*USDOT:* United States Department of Transportation

*Utility:* For purposes of this document, any water, sewer, gas, drainage, irrigation

or culvert pipe and any electric power, telephone, signal, communication, fiber optic, cable T.V. conduit or cable, or operator thereof, serving the public, shall be considered a utility.

*Utility Inspector:* An authorized field representative of any utility owner serving the area where work is performed.

# CHAPTER 3 – GENERAL PROVISIONS

## 3-1 PUBLIC AND OCCUPATIONAL SAFETY

*3-1.1 Compliance Requirements:* All work in public right-of-way shall be done in strict compliance with the rules and regulations of the Traffic Control Manuals, the Occupational Safety and Health Administration, the Americans with Disabilities Act and the Broward County Public Works and Transportation Department. Failure to comply shall result in cessation of operations and the removal of project-related obstructions from public right-of-way until compliance is achieved.

*3-1.2 Certification Required:* All work in any public right-of-way under Broward County jurisdiction shall be performed by a licensed Contractor unless otherwise provided hereinafter.

*3-1.3 Maintenance of Traffic Plans Required*

*3-1.3.1 Maintenance of Traffic Instructions/Requirements*

An approved Maintenance of Traffic (MOT) Plan shall be required any time work is being performed within public right-of-way regardless of whether a permit is required or not. A MOT Plan shall conform to the Broward County Minimum Standards, and Traffic Control Manuals. The approved MOT plan and a copy of the permit, if applicable, shall be onsite at all times. The MOT is valid for the duration of the permit or completion of the project, whichever comes first. All MOT set-up or removal shall be performed by the permittee.

Approval of a MOT Plan requires a minimum of two County work days from the time of receipt of all complete plans prior to issuance of the approval. Additional time may be required for complex plans.

A MOT Plan shall include:

1. The Maintenance of Traffic Submittal Form.
2. A project location map.
3. An applicable FDOT Design Standard Index from the 600 Series and/or a figure from the MUTCD, which represents the roadway on which the work is being performed. All indexes used in Broward County shall be urban indexes.
4. A sketch for non-typical conditions, which include taper lengths, lane shift lengths, lane shift widths, sign spacing, barricade or cone spacing, pavement markings, removal of pavement markings, signal locations, etc.
5. The indexes shall include the name of the roadways represented and a north arrow.
6. Legible FDOT Standard Index notes.
7. A current FDOT approved certification of the Worksite Traffic Supervisor in charge of the project. The certification card shall contain the name,

certificate number, course category (Intermediate: BT-05-0078 or Advance: BT-05-0079), and certificate expiration date. An Intermediate Level Certification Card shall be required for the FDOT Design Standards or a figure from the MUTCD. An Advance Level Certification Card shall be required for all non-typical condition plans that are submitted with the standard index.

8. The MOT submittals shall cover all phases of construction.

9. The sign-off sheet shall be labeled with the project name and/or location of the project if applicable and construction duration.

*3-1.3.2 Vehicular:* Temporary measures shall be taken to provide a minimum of one (1) lane of traffic in each direction on a four (4) lane divided highway, and two (2) lanes of traffic in each direction on a six (6) lane divided highway. Single-lane closures on a two-way roadway, double-lane closures, and road closures may require work to be done at night or on the weekend. These conditions shall be determined on a case-by-case basis. The permittee shall maintain suitable vehicular access to property abutting affected public right-of-way and access to mass transit facilities at all times.

When a roadway is closed to through traffic and local traffic, the permittee shall use forty-six (46) inch high water-filled barrier walls which have been approved by the FHWA, or are listed on the Qualified Product List for Type III barrier walls. Barricades shall be placed perpendicular to the roadway. Road Closed signs, and any other MUTCD required devices shall also be placed perpendicular to the roadway. On a roadway with curb and gutter, the water-filled barrier walls shall be set from an edge of a curb to edge of a curb. On roadways without curb and gutter the water-filled barrier walls shall be set up from the inside edge of the sidewalk to the inside edge of the sidewalk leaving the sidewalk open to accommodate pedestrians, unless provisions have been made to detour pedestrians. Concrete barrier walls shall not be permitted perpendicular to the roadway.

When a road closure is necessary for more than one (1) daylight period, a message board or post-mounted sign (forty-eight (48) inches by forty-eight (48) inches) in each direction of travel shall be required. The message board or post mounted sign shall be in place one (1) week prior to the closure. If a message board or a post mounted sign is used, it shall remain in place until the roadway is opened. If the opening date is extended, the dates on the signs shall be changed as soon as the new date is known, to reflect the proper date of the road opening.

If a hazardous condition is created by removal of guardrail or any other protective device, barrier walls, in accordance with FDOT “Design Standards,” shall be installed by the permittee.

If a drop-off of greater than two (2) inches occurs during construction within the clear zone, protective devices shall be provided per FDOT “Design Standards.”

*3-1.3.3 Permittee Responsibilities:* Upon approval of a MOT plan, permittee shall provide written notification to Emergency Services, Mass Transit, School Board Pupil Transportation, the Highway Construction and Engineering Division, the Traffic Engineering Division, and all businesses, and homeowners whose property abuts the limits of construction for the project, five (5) work days prior to the

commencement of work. All letters shall be on the permittee's letterhead and shall include the name and telephone number of a contact person. Exception may be granted for bona fide emergency work.

Permittee shall be responsible to maintain all signs and street lighting within the construction zone.

Permittee shall provide a twenty-four (24) hour emergency phone number of a person responsible for replacing/maintaining all "STOP," ''YIELD," "STREET NAME," "DO NOT ENTER," and "WRONG WAY" signs, and any other regulatory signs.

The emergency contact person shall have six (6) hours to replace any missing or damaged signs after notification. If they do not respond within six (6) hours, the County may correct the problem, and the permittee shall be charged the actual costs incurred to perform the work.

*3-1.3.4 Neighborhood Improvement Projects:* The Broward County Emergency Vehicle Access Detail Sheet shall be followed when closing a road.

Broward County shall only allow every other street to be closed during the construction of a grid section neighborhood. Exceptions may be granted by the Highway Construction and Engineering Division on a case-by-case basis.

Where an edge of pavement is removed, Type II Barricades shall be installed to delineate the travel lane until the pavement is restored. The maximum allowed distance, each side of the road, shall be as specified by the Traffic Engineering Division.

*3-1.3.5 General Control Devices Requirements:* Advance Warning Signs (forty-eight (48) inches by forty-eight (48) inches) are required on all public right-of-way unless otherwise indicated on the approved MOT plan. All "End of Construction" signs larger than ten (10) square feet shall be double post mounted.

All Advance Warning Signs which remain in place for more than one (1) daylight period shall be post mounted.

All barricades which remain in place for more than one (1) daylight period shall be sand bagged.

Cones, if used, shall be thirty-six (36) inches in height with reflective collars.

Lighted barricades shall be used after daylight. Cones shall not be permitted after daylight.

All traffic control devices used within public right-of-way shall be on FDOT Qualified Product List (QPL).

*3-1.3.6 School/Pedestrian:* All school pedestrian routes shall be maintained throughout the project. Any deviations shall require prior written approval by the Highway Construction and Engineering Division.

*3-1.3.7 Signalization:* All vehicle detection devices shall be maintained for the duration of the project. Any deviations shall require prior written approval by the Traffic Engineering Division. All Traffic Engineering communications facilities located within the project limits shall be maintained throughout the project.

*3-1.4 Maintenance of Public Right-of-Way during Construction*

*3-1.4.1 Maintenance Requirements:* Public right-of-way shall be maintained by the permittee in a safe and functional condition until the permitted work is complete and the public right-of-way is restored and accepted for maintenance by the Highway Construction and Engineering Division, and by all other regulatory agencies having jurisdiction.

*3-1.4.2 Maintenance Period:* The provisions of this Section shall be in effect under all weather conditions, twenty-four (24) hours per day, every day, from the commencement of work until final acceptance by the Public Works and Transportation Department, except in time of emergency, when the Public Works and Transportation Department shall issue special instructions to the permittee. The provisions of Section 3-1.1 of this Chapter, however, shall apply at all times.

*3-1.5 Access to Safety and Utility Control Devices:* Excavation for pipe, structures or cable laying operations shall be conducted in a manner that shall cause the least interruption to pedestrian and vehicular traffic and to Mass Transit patrons. To the extent possible, fire hydrants, valve boxes, fire and police call boxes and other such safety and utility devices shall be left unobstructed and accessible during the construction period. When such obstruction is unavoidable, it shall be held to the minimum, and the permittee shall give sufficient notice to the affected parties to allow other provisions to be made.

*3-1.6 Underground Facility Damage Protection Act:* Prior to commencement of any work in any public right-of-way permittee shall notify the Sunshine State One-Call of Florida, Inc. for underground facility locations, as set forth in the "Underground Facility Damage Prevention and Safety Act" of the State of Florida, Chapter 556 Florida Statues.

## 3-2 PERMIT REQUIREMENTS

*3-2.1 Permit Requirements:* A permit is required for all construction in public right-of-way, both existing and proposed, under Broward County jurisdiction, except as provided in Sections 3-2.1.1, 3-2.2 and 3-2.3 below. Such permits shall only be issued by the Highway Construction and Engineering Division to a licensed Contractor.

*3-2.1.1 Minor Construction or Maintenance Work:* Work such as installation of water meters (up to two (2) inches) at existing service laterals, cable splice pits not in or within two (2) feet of a roadway, street light or traffic signal maintenance, or similar types of work may be done without permit or prior notice to the Highway Construction and Engineering Division. However in all cases a MOT plan shall be required, if deemed necessary by the Traffic Engineering Division. This is not to be construed as including cable replacement or any other type of facility upgrading or rehabilitation involving excavation, except for splice pits.

Pits for such minor construction shall be backfilled or plated any time work has not been performed in the pit for forty-eight (48) consecutive hours.

*3-2.1.2 Change of Contractors:* In the event there is a change of permittee for any permitted work, the new permittee shall not proceed with any activities in public right-of-way until a new permit has been issued. The new permit shall not be issued until all necessary releases and other required documentation has been received from the prior permittee.

*3-2.2 No Construction before Permit:* Except as provided hereinafter, no construction shall be initiated until a permit for the proposed installation has been issued by the Highway Construction and Engineering Division.

*3-2.2.1 Work Inside of Existing Maintenance Access Structures:* Permits shall not be required for work inside of existing maintenance access structures or handholes within public right-of-way unless such work, as determined by the Highway Construction and Engineering Division, involves disruption of, or a hazard to, pedestrian and/or vehicular traffic in public right-of-way.

If there is a disruption to either pedestrian or vehicular traffic, an approved MOT plan shall be required as set forth herein.

*3-2.2.2 Tree Trimming:* Permits shall not be required for tree trimming in public right-of-way, but the Highway Construction and Engineering Division shall be given twenty-four (24) hours prior written notice of such activity, and proper traffic maintenance, in accordance with MUTCD, shall be established at the site prior to the start of trimming. Where any traffic lane shall be obstructed, a “Construction Ahead” or “Right/Left Lane Closed” sign shall be conspicuously placed at least five-hundred (500) feet in advance. A flashing, lighted arrow board shall be displayed in the closed lane, with transitioning traffic cones placed twenty-five (25) feet on center.

At no time shall personnel, material or equipment be allowed to create a sight obstruction (based on AASHTO sight triangle considerations).

*3-2.2.3 Planting and Irrigation:* A permit and Beautification Agreement are required anytime landscape, hardscape and/or irrigation is to be installed in public right-of-way. See Chapter 17, Section 17-1.1.4 for Beautification Agreement requirements. The provisions of Chapters 17, 18 and 19 shall apply.

A permit shall not be required for the removal of trees, shrubs, or landscape irrigation in public right-of-way by the owner of an abutting property, or by any municipality requiring such work by the owner of an abutting single family or duplex residence, provided that the Highway Construction and Engineering Division is properly notified in advance, in accordance with Section 3-3.3.1 of this chapter. The provisions of Chapters 17, 18 and 19, as applicable, shall govern the materials, installations and operation, except that irrigation record drawings and certifications shall not be required.

However, prior to beginning work it is the responsibility of the owner of the abutting

property to determine if a permit is required by the Environmental Protection Department or another governmental agency.

*3-2.3 Emergency Work:* None of the above permit procedures apply to emergency repair work in public right-of-way. Emergency repair work is defined as that which must be done immediately upon discovery, in order to safeguard the public from immediate danger to life or limb, to safeguard public health or welfare, or to restore interrupted utility services. In the event of such emergency, repair work may be started without a permit upon verbal notification being given to the Highway Construction and Engineering Division. If the Highway Construction and Engineering Division offices are closed, then notification shall be given as early as possible on the next regular work day. After the emergency repair is completed and the public right-of-way is restored, a record sketch shall be submitted to the Highway Construction and Engineering Division, unless otherwise provided hereinafter, within ten (10) working days. Work that can be scheduled ahead of time shall not be considered emergency work.

## 3-3 NOTICE REQUIRED

*3-3.1 Preconstruction Meeting:* Prior to starting any work in public right-of-way, the Engineer of Record, the utility owner, the permittee, and any other parties deemed necessary by the Highway Construction and Engineering Division, shall meet with the Public Works and Transportation Department to review the proposed work.

*3-3.2 Start of Construction:* The Highway Construction and Engineering Division requires forty-eight (48) hours notice prior to commencing any work in the public right-of-way.

*3-3.3 Schedule for Inspection and/or Testing:* For inspections and tests within public right-of-way, the Highway Construction and Engineering Division shall be notified at least twenty-four (24) hours in advance to schedule an inspector to the site.

The Engineer of Record for the project shall be present for all inspections and tests, unless instructed otherwise by the Highway Construction and Engineering Division.

## 3-4 FACILITIES IN PUBLIC RIGHT-OF-WAY

*3-4.1 Ownership and Maintenance of Facilities:* Except as otherwise approved by the Highway Construction and Engineering Division, all facilities to be installed within public right-of-way shall be owned and maintained by a public service utility or franchisee or by a political entity competent to function within the State of Florida, and shall remain the liability of the last operating entity until removed, unless the facilities are required to be left in place by the Highway Construction and Engineering Division.

*3-4.2 Location of New Facilities:* Where utility easements are available, utilities shall locate all poles, lines, vaults, conduit and other facilities within those easements. Placement of facilities in portions of public right-of-way, other than in

easements, shall only be considered as a least preferred option. For utility placement details, see Drawings 7, 8, 9 and 10 in Appendix A.

*3-4.3 Abandoned Facilities:* All exposed facilities and such underground facilities, as may be designated by the Highway Construction and Engineering Division, which are abandoned within public right-of-way, shall be removed by the owner of the facility unless other provision is approved by the Highway Construction and Engineering Division. Any abandoned facility allowed to remain in public right-of-way shall continue to be the responsibility of the owner or operator who last used the facility. Such owner or operator shall be liable for all costs arising from the presence of the abandoned facility in the public right-of-way. This section does not apply to facilities required to remain in place by the Highway Construction and Engineering Division.

*3-4.4 Miscellaneous Facilities:* Permit applications for all types of facilities or installations not specifically addressed in this document shall be reviewed according to standards established by the Director of the Highway Construction and Engineering Division on a case-by-case basis. Bus shelters placed in public right-of-way shall meet all applicable codes, and be approved by the Mass Transit Division and the Building Code Services Division (see Drawing 31 in Appendix A for Transit Accessory Pad Site Plan Required Information).

*3-4.5 Underground Facilities:* All underground and in-ground facilities in public right-of-way shall be designed and installed so as to safely sustain any vehicular and construction loads that might be placed upon them.

*3-4.5.1 Muck Removal:* Prior to placing any underground facility in public right-of-way, unless otherwise approved by the Highway Construction and Engineering Division, the permittee shall remove all muck and other deleterious material existing within the zone extending from the ground level to the horizontal plane four (4) feet below the facility's intended location and from the vertical plane four (4) feet beyond one (1) side of the facility's intended location to the vertical plane four (4) feet beyond the opposite side of facility's intended location. If so doing, based on the judgment of the Highway Construction and Engineering Division, would endanger an existing facility, permittee shall de-muck only that area which can be done without such endangerment.

*3-4.5.2 Muck Removal for Direct Burial Cables or Conduits:* The requirements of Section 3-4.5.1, above, shall not apply to direct burial cables or conduits for cables, but any cable or conduits for cables so placed shall be subject to the provisions of Section 3-4.5.3 below.

*3-4.5.3 Facilities Placed Without De-mucking:* Any facility placed without de-mucking shall be subject to abandonment or relocation by the operator of said facility in the event that de-mucking shall be done at a later date.

*3-4.5.4 Underground Facilities in Areas to Be Paved:* In all areas to be paved, permittee shall contact the maintaining agency for all underground facilities not yet in service. After the roadway base has been constructed but before the wearing course(s) have been placed, the maintaining agency shall test the facilities to make sure they are in proper operating condition. All damaged or defective portions of

such facilities shall then be replaced or repaired, and the roadway base restored by the maintaining agency. At that point, the facility shall again be tested to assure that it is in proper operating condition. This procedure shall be repeated until the facility is determined to be in proper operating condition, after which the wearing course(s) may be placed.

Tests required for this Section are as follows:

1. For pressure piping (refer to appropriate utility test requirements in this document), line service pressure shall be maintained for two (2) hours, with not more than a five (5) pound loss in pressure.
2. For gravity flow systems, exfiltration and visual inspection (lamping, etc.) shall suffice.
3. For sleeves and conduits, lamping or mandrelling shall be performed.
4. For other facilities, tests shall be as directed by the Highway Construction and Engineering Division.

*3-4.5.5 Underground Facility Crossings:* Underground facility crossings of paved roads shall be made by the “bore and jack” method unless an alternate method is approved by the Highway Construction and Engineering Division. The minimum distance from the existing edge of pavement to a bore pit and/or a receiving pit shall be four (4) feet unless otherwise approved. Proposed open cuts shall be shown on the drawings submitted for approval to the Highway Construction and Engineering Division. An alternate method of road crossing may be considered if plans are submitted demonstrating the bore and jack method to be impractical. The permittee shall start the boring far enough from the edge of pavement as determined by the Highway Construction and Engineering Division to be able to obtain proper cover.

Missile boring shall not be permitted in public right-of-way without prior written approval by the Highway Construction and Engineering Division.

*3-4.5.6 Extraction of Pipe from Bore:* The extraction of pipe or conduit from beneath any roadway is prohibited without prior written approval by the Highway Construction and Engineering Division. Where approved, the right-of-way shall be trenched and later restored in accordance with Drawings 11, 12, 13 and 14 in Appendix A.

*3-4.5.7 Relocation of existing facilities:* Relocation of any existing utility must be approved by the Highway Construction and Engineering Division.

*3-4.6 Detection Aids:* All underground facility installations shall include approved detection aids for later determination of location without excavation.

*3-4.6.1* Potting holes to locate underground facility installations shall be allowed with prior written approval of the Highway Construction and Engineering Division. Such holes shall be backfilled, compacted and restored in such a manner that all suitable material removed during excavation is replaced in the hole.

## 3-5 TRAFFIC ENGINEERING

*3-5.1 Standards and Specifications:* Prior to commencing any work within public right-of-way, the Engineer of Record, the permittee and all Subcontractors shall comply with Broward County "Traffic Engineering Standards and Specifications."

## 3-6 CONSTRUCTION

*3-6.1 Availability of Plans, Permit and MOT Plan:* A set of plans for the project bearing the Highway Construction and Engineering Division approval stamp, the Permit issued by the Highway Construction and Engineering Division, and the MOT plan approved by the Traffic Engineering Division, shall all be onsite whenever work is in progress. In the event that any one of these items is not so located, work shall not be allowed to begin or, if already begun, shall be halted.

*3-6.2 Start of Construction:* Prior to the start of construction the permittee shall notify the Highway Construction and Engineering Division whether or not all work to be done "by others" has been completed, or has been scheduled to be completed during a specific phase of construction.

*3-6.3 Supervision of Construction:* The permittee shall keep sufficient competent supervision onsite while work is in progress to ensure that the work is being performed properly and in a safe and orderly manner. The supervisor shall be authorized to receive and implement notices regarding the installation, working procedures and/or job-site safety from a representative of, or from the Engineer of Record, or in their absence, from the County Inspector. The supervisor shall ensure that everyone within fifteen (15) feet of a work area wears a safety vest. The permittee is responsible for overall site safety and for the safety of all activities of any subcontractor who performs work in public right-of-way under the permit.

*3-6.4 Interruption and Restoration of Services:* Adequate provision shall be made for the safe, continuous operation of any facilities encountered during construction, unless other approved arrangements have been made. The maintaining agencies of all such services and all structures altered or damaged during construction shall be notified immediately, and all such services and structures shall be satisfactorily restored unless otherwise approved.

*3-6.5 Removal of Pavement, Drives, Sidewalks, Curbs and Gutters:* Edges of concrete or asphaltic pavement shall be pre-cut straight, clean, smooth and square beyond any damaged base area including well point locations. Utility cuts in existing pavements shall be restored as indicated on Drawings 11 through 16 in Appendix A. When the removal of sidewalks, curbs or gutters is necessary for construction, they shall be removed in full sections or a minimum of five (5) feet in length, and all broken edges cut straight, clean and smooth by appropriate means. If the road pavement is damaged during such removal, it shall be repaired in accordance with Chapter 5, Section 5-6.

The restoration of pavement at a maintenance access structure shall be in accordance with Drawing 13 in Appendix A.

*3-6.6 Excavation*

*3-6.6.1 Bracing and Shoring:* Sheeting, bracing, etc., shall be used as required to support the sides of the excavation and to prevent any movements which can in any way alter the grade of or injure the facility being installed, diminish the width of excavation or otherwise injure or delay the work or endanger personnel, adjacent pavements or other structures. Safety procedures shall be followed and adequate protection shall be furnished to all personnel as required by OSHA and State Statute. All sheeting or bracing which is not left in place shall be removed in a manner that shall not endanger the work, personnel or adjacent structures. To prevent trench undermining proper trenching methods and equipment shall be used, and all personnel and equipment shall be kept at a safe distance.

*3-6.6.2 Disposal of Excavated Materials:* Broken pavement and other debris shall be removed from the site as soon as practical, unless otherwise directed by the Highway Construction and Engineering Division. Excavated materials may not be stockpiled in public right-of-way during construction without specific approval of the Highway Construction and Engineering Division. All excess materials shall be removed from the work-site and disposed of legally by, and at the expense of, the permittee.

*3-6.6.3 Disposal of Water from Excavation:* Adequate provision shall be made for the satisfactory disposal of water resulting from de-watering or pumping operations or from encounter with water in any manner. The method of handling or disposing of such water shall be in accordance with applicable regulations of all agencies having jurisdiction including, but not limited to, the State Health Department, State Department of Environmental Protection and the Broward County Environmental Protection Department.

*3-6.7 Backfilling and Compaction*

*3-6.7.1 Field Density Tests:* All field density tests shall be made in accordance with ASTM Standard D5195 using Surface Moisture-Density Gauges, unless otherwise approved. If the first two (2) densities taken during a density test fail, the test shall be rescheduled.

*3-6.7.2 Embankments:* All material shall be granular, and well-graded, and shall have a minimum Load Bearing Rating (LBR) of 40. All stripped asphalt and vegetation shall be removed from backfill material. With the approval of the Highway Construction and Engineering Division, rocks that are removed may be crushed and used as backfill. Material of FDOT Class A-5, A-7, or A-8 shall not be allowed.

Backfill material shall be placed in layers not to exceed eight (8) inches in thickness, with each layer carefully compacted to 100% of maximum density, per AASHTO T-99-C, and tested by the permittee, under the supervision of the Highway Construction and Engineering Division, before placing succeeding layers. Swale areas need only be compacted to 95% of maximum density, per AASHTO T-99-C. Density tests shall be taken by the permittee, in each lane and shoulders at intervals of five-hundred (500) feet or less, as directed by the Highway Construction and Engineering Division representative.

*3-6.7.3 Pits and Trenches:* After a structure, cable, conduit or pipe is acceptably installed, tested and approved; backfilling shall be done with approved material.

In dry trenches, backfill material shall be placed evenly and carefully around and over the pipe in twelve (12) inch maximum layers, each layer being thoroughly compacted, until one (1) foot of cover exists above the crown of the pipe. The remaining trench portion up to the pavement base shall be backfilled in layers not exceeding eight (8) inches, with each layer being compacted and tested at intervals of one-hundred (100) feet, with 100% maximum density, per AASHTO T-99-C, before placing succeeding layers.

Unpaved areas shall be compacted to 95% of maximum density, per AASHTO T-99-C, and testing shall be at the County Inspector's discretion which shall include consideration of the following criteria in determining the nature and frequency of testing: proximity to pavement, depth of cut, nature of soil, elevation of ground water, previous test results, length of trench, type of compaction equipment used, and such other relevant factors as may exist at the site. All materials shall be able to pass through a six (6) inch ring. Use of wash rock shall not cause settlement due to sand filling the voids.

Laboratory testing for the optimum moisture and maximum soil density shall conform to the specifications of AASHTO T-99-C (Standard Proctor). Restoration of the roadway shall be in accordance with Drawings 11, 12, 13 and 14 in Appendix A.

At the permittee's option, with the approval of the Engineer of Record, and with the County Inspector's approval, after the compacted backfill has reached the centerline of the newly installed pipe or conduit, the remaining trench backfill may be placed to one (1) foot above the ground water level without interim compaction, provided that the water is allowed to rise in the trench to its natural level and then be pumped down to the pipe invert, at least twice. The balance of the trench backfill shall then be placed and compacted as described for dry trenches.

*3-6.8 Restoration of Public Right-of-Way*

*3-6.8.1 Work Area Restoration:* The entire work area utilized for the performance of any permitted work shall be restored by the permittee to meet current standards for new construction, as set forth in these Minimum Standards, except as required by the nature of the permitted work or as directed by the County Inspector or as otherwise provided hereinafter.

*3-6.8.2 Paved Areas:* Paved sections shall conform in type, shape, elevation and texture with adjacent paved areas and shall be of at least equal quality. Design mixes for flexible pavements shall be subject to approval by the Highway Construction and Engineering Division. All areas of new or existing pavement, damaged or undermined in the course of permittee operations, shall be removed and restored as set forth herein. Where pavement is removed for installation, maintenance or removal of any underground facility, restoration shall be in accordance with Drawings 11, 12, 13 and 14 in Appendix A.

Equipment shall not travel over loose rock fragments or other hard material lying

on sections of pavement which are not to be removed. When pavement is to receive an asphalt overlay, the County Inspector may require the installation of a leveling course in order to eliminate irregularities and unevenness in the existing pavement surface.

*3-6.8.3 Swale Areas, Medians, Sidewalks, Driveways:* Swale areas, medians, sidewalks, driveways, etc., and all other existing facilities shall be restored in kind in accordance with the provisions of 3-6.8.1 of this Chapter, except that driveway restoration materials shall be limited in kind to plain concrete or asphalt.

For sidewalk details see Drawings 14, 15 and 16 in Appendix A.

Swales or retention areas adjacent to sidewalks shall be graded and sodded immediately so as to avoid undermining of the sidewalk.

*3-6.8.4 Benchmarks and Survey Markers:* All benchmarks and permanent reference survey markers are to be protected at all times. If a benchmark or permanent reference survey marker is disturbed, or covered by pavement or sidewalk during the course of construction it shall be replaced or raised at an equal or better level of precision, at the permittee's expense, by a Professional Surveyor and Mapper registered in the State of Florida. All such disturbances shall be reported to the County Surveyor immediately.

*3-6.9 Restoration of Signs and Pavement Markings:* Any signs or pavement markings that have been damaged or destroyed shall be repaired or replaced in accordance with Traffic Engineering Standards and Specifications.

## 3-7 INSPECTIONS, TESTS, VIOLATIONS AND CERTIFICATIONS

*3-7.1 Right of Entry:* Personnel of the Public Works and Transportation Department shall have the right to enter any work-site to inspect or test material and/or workmanship on projects for which a Highway Construction and Engineering Division permit to construct has been, or should have been obtained from the Highway Construction and Engineering Division, or which is to be constructed in accordance with Broward County's "Minimum Standards."

*3-7.2 Inspections and Tests:* All inspections and tests necessary to ensure construction conformity with the plans and specifications as approved by the Public Works and Transportation Department shall be made by or under the direct supervision, of the Engineer of Record, or an authorized representative of the Engineer of Record.

The Highway Construction and Engineering Division shall perform such inspections and shall require such tests as it deems appropriate to ensure proper installation, and shall witness all such tests.

No labor, material or equipment required for testing of facilities, shall be furnished by the Highway Construction and Engineering Division except as noted hereinafter. The permittee shall perform the tests(s) in the presence of the Engineer of Record and a Highway Construction and Engineering Division representative. If the Highway Construction and Engineering Division fail to witness a properly scheduled

test, the certification of the Engineer of Record shall only be accepted, as determined by the Highway Construction and Engineering Division.

*3-7.2.1 Signals:* Inspection of communication conduit/interconnect cable and signalization items shall be performed by the Traffic Engineering Division and the Engineer of Record. A written inspection request shall be provided by the Engineer of Record to the Traffic Engineering Division at least fourteen (14) days prior to the required date. This request may be FAXED to the Traffic Engineering Division.

*3-7.2.2 Street Lights:* Inspection of street lights shall also be performed by the maintaining agency, and the Engineer of Record. If the maintaining agency is the Traffic Engineering Division, a written inspection request shall be provided, by the permittee performing the street light work, to the Traffic Engineering Division at least fourteen (14) days prior to the required date. This request may be faxed to the Traffic Engineering Division.

*3-7.2.3 Signs and Pavement Markings:* Inspections of the signs and pavement markings shall be performed by the Traffic Engineering Division. A written inspection request shall be provided by the Engineer of Record. This request may be faxed to the Traffic Engineering Division. For details pertaining to signs and pavement markings see Drawings 26 and 27 in Appendix A.

*3-7.2.4 School Flashers:* Inspections of school flashers shall be performed by the Traffic Engineering Division. A written inspection request shall be provided by the permittee performing the work, to the Traffic Engineering Division at least seven (7) days prior to the required date. This request may be FAXED to the Traffic Engineering Division.

*3-7.3 Violations:* A permittee who violates a permit condition may be issued a "Notice of Violation," and if deemed necessary by the Highway Construction and Engineering Division, the job may be shut down immediately. If the violation is not of a serious nature, the permittee may be given a reasonable amount of time to remedy the situation. If the violation is not corrected before the end of the period, the job may be shut down.

If the permittee refuses to sign the "Notice of Violation," the Highway Construction and Engineering Division may shut the job down immediately.

*3-7.4 Certifications:* The Engineer of Record or it's representative shall carefully observe and/or inspect all portions of the permitted installation sufficiently to determine that the permittee has substantially complied with all approved plans and specifications related thereto, and the Engineer of Record shall so certify at the completion of the work.

## 3-8 RECORDS

*3-8.1 Reports*: Any reports relating to construction progress, tests or other matters which may be required by the Highway Construction and Engineering Division, the Broward County Health Department or the Engineer of Record shall be made available to the Highway Construction and Engineering Division upon request without charge.

*3-8.2 Record Drawings*: Except as hereinafter provided, upon completion of construction and prior to final inspection or commencement of any maintenance period for which security has been posted, the Engineer of Record or Landscape Architect shall furnish to the Highway Construction and Engineering Division, one (1) set of record drawings signed and sealed by a Professional Surveyor and Mapper certifying the as-built location dimensions and elevations shown thereon. The Engineer of Record shall then certify that the subject installation has been completed in substantial conformity with the approved plans and specifications and that he has reviewed and is satisfied with the Professional Surveyor and Mapper certified as-built information contained on the record drawings for the subject installation. Special requirements for various types of installations are detailed in the Chapters that follow.

*3-8.2.1 Submission of CAD Drawings:* When the design drawings have been produced using a Computer Assisted Design (CAD) system, the "as-built" of record drawings shall also be produced on the CAD system and the Engineer of Record shall also submit a copy of the storage medium containing the information from which the as-built drawings were produced.

**3-9 REVIEW OR REVISION OF COUNTY STANDARDS**: Any request for review or revision of these Standards shall be made to the Director of the Highway Construction and Engineering Division in writing, stating the item to be considered and setting forth the objections and suggestions for revision. The Director shall respond in writing as soon as possible thereafter, but in any event, within sixty (60) days after receipt of such request.

**3-10 NOTIFICATION OF COMPLETION**: The permittee shall notify the Highway Construction and Engineering Division immediately upon completion of the permitted work. The permittee shall notify the Highway Construction and Engineering Division if it becomes known that the start of the work shall be unduly delayed, or if the work shall not be done.

**3-11 DIRECTOR'S DISCRETIONARY AUTHORITY**: The Director of the Highway Construction and Engineering Division shall have the authority, and sole discretion, to modify, add to or waive any provisions in this document if, in the Director's professional opinion, the circumstances of any given situation so warrant.

# CHAPTER 4 – PERMITS, FEES AND SECURITY

## 4-1 PROCEDURE FOR OBTAINING A PERMIT

*4-1.1 Construction Drawing Review*: Prior to application for permit, a minimum of seven (7) complete sets of construction drawings for the proposed work, signed and sealed by an Engineer, registered in the State of Florida, shall be submitted to the Highway Construction and Engineering Division for review and approval. The submittal shall include a completed plan review application form, a survey (which accurately reflects current field conditions), signed and sealed by a Professional Surveyor and Mapper, registered in the State of Florida and a signed and sealed Estimated Cost of Improvements Form that clearly distinguishes the work to be performed in public right-of-way from work to be performed outside public right-of-way, unless otherwise specified hereinafter. Plans involving only landscape work may be signed, sealed, and submitted by a Landscape Architect, registered in the State of Florida.

Prior to application for permit, the Engineer of Record is responsible to verify that project design is based upon the latest "Minimum Standards."

*4-1.2 Obtaining Plan Review Forms*: The applications for plan review, as well as other necessary forms, are available at the Highway Construction and Engineering Division office.

The plans, together with all required forms, and any required review fees should be submitted to:

Highway Construction and Engineering Division
1 N University Drive, Suite 300
Plantation, FL 33324-2038

If you have any questions call the Highway Construction and Engineering Division.

*4-1.3 Plan Approval*: Plan review is normally completed within two (2) weeks. Upon completion of the review, the owner and the Engineer of Record/Landscape Architect shall be advised, in writing, whether the plans were approved. If the plans were not approved, the letter shall advise what items need to be submitted or revised. If necessary, one (1) copy of each drawing, noting all required revisions, shall be returned to the entity indicated on the application, with an explanatory letter. One (1) set of approved drawings with an approval letter shall be returned to the Engineer entity indicated on application. When the drawings are approved, application shall be made for a permit to construct.

Construction drawing approvals shall be void after one (1) year unless the Highway Construction and Engineering Division permit to construct the approved facilities is in effect. For large, phased projects, the Highway Construction and Engineering Division shall consider a request for a one (1) year extension of approval.

*4-1.4 Maintenance of Traffic (MOT) Plan:* Once the drawings are approved, application for a permit to construct may be made. When required, a MOT plan shall

be submitted to the Traffic Engineering Division for approval. The plan shall be in accordance with FDOT "Design Standards," Index 600 series. Construction may not commence until Traffic Engineering Division approval has been obtained.

*4-1.5 Changes in Applicable Standards, Regulations or Laws:* In the event that applicable standards, regulations or laws change subsequent to construction drawing approval, but prior to permit issuance, revised plans shall be submitted for approval under the new requirements.

*4-1.6 Documents Required for Permit Issuance*: The following items need to be provided to the Highway Construction and Engineering Division before a permit can be issued:

- A cost estimate as described in Chapter 4, Section 4-1.1
- A check in an amount in accordance with Chapter 4, Section 4-3.1, payable to the "Broward County Highway Construction and Engineering Division"
- Approval of the Florida Department of Health and/or the Broward County Environmental Protection Department, as applicable and approval of all other agencies having jurisdiction
- A copy of permittee's license, appropriate for the type of work to be done
- Required security amount in a form acceptable to Broward County
- A Copy of permittee's liability insurance coverage

Once all the necessary documents are in order they should be submitted to the Highway Construction and Engineering Division at:

Highway Construction and Engineering Division
1 N University Drive, Suite 300
Plantation, FL 33324-2038

*4-1.7 Permit Issuance*: Permit review is normally completed within one (1) week. Upon completion of the review, a permit (signed and dated by the issuing agent for the County) together with a stamped copy of the approved construction plans, shall be mailed to the permittee. Or the permittee may request to be called when the permit is ready so that it can be picked up. If the permit submittal is incomplete or in error, the permittee shall be advised of what items need to be submitted or revised. The application, when signed and dated by the issuing agency for the County, shall constituter the Permit to Construct.

Note: The Traffic Engineering Division shall not approve the MOT plan unless a permit has been issued, and the permit number has been given to them. If you have questions about MOT plan requirements call the Traffic Engineering Division.

*4-1.8 Start of Construction:* Permits shall be issued for work in public right-of-way only after all required plans have been approved, the required fees have been paid, and the required Performance and Maintenance security has been posted. Construction shall not commence within any public right-of-way until the applicant has obtained all necessary permits and approvals, including MOT plan approval, and

has received approval to commence work from the Highway Construction and Engineering Division Inspection section at least forty-eight (48) hours in advance of the actual start of construction.

Additionally, unless otherwise authorized by the Highway Construction and Engineering Division, a pre-construction meeting shall be required before any work may begin.

*4-1.9 Incorrect, Misleading or Omitted Information:* Plan approval is based primarily upon the information contained thereon. Evidence of incorrect, misleading or omitted information having significant bearing on the approvability of a previously approved plan shall be cause for rescission of the Highway Construction and Engineering Division approval, permit suspension, cessation of work (if started), and resubmittal of the corrected plans for approval. Subsequent minor revisions may be indicated upon approved prints, but such changes shall be signed and dated by representatives of the Engineer of Record and the Highway Construction and Engineering Division, prior to the permittee proceeding with the revision.

*4-1.10 Construction Requirements:* County plan approvals and permits notwithstanding, all installations in public right-of-way shall meet or exceed the requirements of FDOT “Green Book” and this document.

*4-1.11 Drawings: Traffic Engineering Division Approval*: Drawings detailing any signal modification or installation, interconnect plans, school flasher plans, or signing and pavement markings plans shall have the written approval of the Traffic Engineering Division prior to the issuance of the Permit to Construct

## 4-2 PERMIT EXPIRATION

*4-2.1 Date of Issuance:* Paving and Drainage permits shall become invalid one hundred and eighty (180) calendar days from date of issuance if work has not begun on a permitted project, unless other provisions have been made with the Highway Construction and Engineering Division.

Water and Sewer permits shall become invalid one hundred and twenty (120) days from date of issuance if work has not begun on a permitted project, unless other provisions have been made with the Highway Construction and Engineering Division.

*4-2.2 Suspension of Work:* Permits shall become invalid upon suspension of work in excess of 90 days on any permitted work, unless an extension has been granted by the Highway Construction and Engineering Division.

*4-2.3 Completion of Work:* Permits shall expire upon completion of the permitted work and approval and acceptance of the installation (including restoration of public right-of-way) by the permittee, all regulatory agencies involved, and the Highway Construction Engineering Division.

*4-2.4 Permit Expiration*: All permits shall expire two (2) years from date of issuance unless an extension is granted by the Highway Construction and Engineering Division.

*4-2.5 Resumption of Work after Permit Expiration:* Once a permit has expired, before any work may continue, begin or resume, a new permit shall be obtained with all current conditions and regulations having to be met including new plan approval. A new permit fee shall be charged for the uncompleted portion only.

## 4-3 FEES AND SECURITY

*4-3.1 Applicable Charges:* The Construction Permit fee, performance and maintenance security and any other applicable charges, when required shall be determined by the Highway Construction and Engineering Division. Fee and security amounts shall be based upon rates and conditions as approved by the Board of County Commissioners, and upon the work to be permitted including public right-of-way restoration, as determined by the Highway Construction and Engineering Division. Re-inspection and retesting fees, payable at time of rescheduling, shall be based upon rates and conditions as approved by the Board of County Commissioners.

*4-3.2 Form of Payment*: Permit fees and other applicable fees and charges may be paid in the form of cash or check. Checks shall be made payable to the "Broward County Highway Construction and Engineering Division."

*4-3.3 Re-Inspection and Retesting Fees*

*4-3.3.1 Re-inspection / Retesting Fees:* A re-inspection and/or retesting fee shall be charged each time an inspector of the Public Works and Transportation Department must visit any job-site to re-inspect and retest any installation or portion thereof that has failed to meet County requirements on a previous test or scheduled inspection. Re-inspection and retesting fees, payable at time of scheduling, shall be based upon rates and conditions as approved by the Board of County Commissioners. All fees shall be paid prior to re-scheduling.

*4-3.3.2 Notice of Cancellation:* Notice of cancellation of any test(s) or scheduled inspection(s) shall be given at least four (4) working hours, prior to the scheduled time. Failure to do so shall result in the test or inspection being counted as a failure, and a re-test or re-inspection fee shall be charged when the test is rescheduled.

*4-3.4 Work Performed by a Municipality:* No fee shall be payable by any municipality seeking permission to perform work in public right-of-way normally performed by the County as part of County's own jurisdictional responsibility. Prior approval to perform this work shall be obtained from the Highway Construction and Engineering Division.

This provision shall apply when such work is performed by municipal employees or by a permittee operating under a contract with the municipality. All such work shall be performed in accordance with these rules and regulations.

*4-3.5 Performance and Maintenance Security:* Performance and Maintenance *Security* may be posted in the form of cash, Certified Checks, or Letters of Credit. Letters of Credit shall be irrevocable and shall indemnify the Broward County Board of County Commissioners against costs of restoring or maintaining public right-of-way due to or arising from failure of the permittee to properly complete the work, to pay fully for labor, material or equipment supplied for the project, or for a failure in public right-of-way related to the permitted installation; for a period of one (1) year after the permitted work and all required documentation has been completed, approved and accepted by the Highway Construction and Engineering Division. The Letter of Credit form must be acceptable to the Broward County Attorney's Office. Notice of impending cancellation, revocation or non-renewal shall be given to the designated County Official(s) at least thirty (30) days prior to such event.

In the event of a failure in public right-of-way related to the permitted work, the warrantor shall promptly effect such repairs as are required by the Public Works and Transportation Department, and the warranty period on these repairs shall be extended for a period of one (1) year from the date of acceptance by the Public Works and Transportation Department of such repairs.

# CHAPTER 5 – PAVING AND DRAINAGE - GENERAL REQUIREMENTS

**5-1 PERMITS:** Permits for construction, modification or maintenance of roadways, sidewalks, drainage or related facilities shall be issued only after the following requirements have been met:

*5-1.1 Paving and Drainage Plan Review*: Paving and Drainage plans shall have been reviewed and approved by the Highway Construction and Engineering Division prior to submittal of an application for permit.

*5-1.2 Chapter 4 Provisions:* The provisions of Chapter 4 of this document apply.

## 5-2 PERMIT FEES AND SECURITY

*5-2.1 Fees and Security Charges:* Fees and Security shall be charged in accordance with the provisions of Chapter 4, Section 4-3 except as provided in Section 5-2.2 below.

*5-2.2 Security for Residential Driveway Connection:* No Security shall be required for residential driveway connections under the following conditions:

1. Work is to be done by the owner or Contractor for the owner of abutting property
2. Permit application is for one (1) single-family or duplex residence
3. Permit is for a single eighteen (18) foot maximum width driveway only, not requiring additional drainage facilities, or sidewalk installation or restoration

*5-2.3 Re-inspection and Re-testing Fees*: The provisions of Chapter 4, Section 4-3.3 shall apply.

## 5-3 PLANS AND SPECIFICATIONS

*5-3.1 Plan Submittal Requirements:* All plans shall be submitted on white prints with blue or black lines. In addition to the proposed project they shall show all existing facilities as well as all other proposed facilities, including bus stops and related facilities, sufficiently to permit assessment of the compatibility of the proposed work and the existing systems. All plans submitted to the Highway Construction and Engineering Division pursuant to Section 5-1.1 of this Chapter shall meet the following requirements, except as provided in Section 5-3.13 of this document. The provisions of Chapter 3, Section 3-1.3 shall apply.

*5-3.2 Sheet Size:* Plans shall be submitted on 24” x 36” sheets except that, for small projects, plans may be submitted on legal size paper, provided that scale requirements are met and only one (1) sheet is required.

*5-3.3 Plan Layout:* General area layouts shall be prepared at a scale of three-hundred (300) feet or less to the inch. Detailed plans shall be prepared at a scale of twenty (20) feet or less to the inch except for local subdivision roads outside of the trafficway corridor which may be prepared at a scale of forty (40) feet or less to the

inch. Design drawings for arterial and collector roads shall include both plans and profiles. Design drawings for local roads need not include roadway profiles if sufficient elevations are provided. When profiles are drawn, they shall be to the same horizontal scale as the plan. All elevations shall be based on the National Geodetic Vertical Datum (NGVD). All roadway design plans shall show sufficient roadway geometry to determine proper design / construction aspects of the project.

*5-3.4 Abutting Subdivisions:* The names and boundaries of all abutting subdivisions shall be shown, giving the plat book and page number of the recordation.

*5-3.5 Non-platted Areas:* Areas not platted shall be shown as acreage, and the Section, Township and Range shall be noted.

*5-3.6 Right-of-Way Dimensions:* Dimensions of public right-of-way shall be indicated.

*5-3.7 Legends:* All plans shall show suitable legends.

*5-3.8 Street Identification:* All streets shall be identified.

*5-3.9 Proposed Pavement:* Proposed pavement shall be clearly indicated on the drawings and shall be dimensionally located within public right-of-way.

*5-3.10 Utilities:* All existing and proposed utilities in public right-of-way shall be shown on the paving, grading and drainage plans. All utilities shall be identified and located by dimension, horizontally and by elevation, and their materials of construction shall be noted to the extent determinable without excavation. All existing utilities that have been abandoned, but are still in the ground, shall be shown on the plans and labeled “abandoned.”

*5-3.11 Cross-sections and Typical Sections:* Cross-sections and/or typical sections of proposed road and drainage construction, shall show dimensions, materials and purposes of all existing facilities as well as all proposed facilities within public right-of-way.

*5-3.12 Title Sheet:* The title sheet shall bear the following note and shall be signed and sealed by the Engineer of Record: The public roadways indicated these plans have been designed in accordance with FDOT “Design Standards.”

*5-3.13 Maintenance of Traffic Plan:* A Maintenance of Traffic Plan, submitted by applicant and approved by the Traffic Engineering Division, is required prior to the commencement of construction in any public right-of-way.

*5-3.14 Residential Driveway Connections:* Plans for residential driveway connections, meeting the conditions of Section 5-2.2 of this Chapter, may be submitted on legal size paper provided that scale requirements are met and only one (1) sheet is required. Such plans need not be signed or sealed by a P.E. and need not indicate the locations of existing underground facilities.

*5-3.14.1 Permit Required:* Prior to construction of a residential driveway adjacent to County right-of-way, a "Driveway Permit" shall be obtained from the Highway Construction and Engineering Division. To obtain the permit the following items shall be submitted for approval: A properly completed "Application for Permit for Construction in the Public Right-of-Way" signed by the qualifier; and, three (3) legal size copies of a survey (that accurately reflects current field conditions) and clearly shows the work to be done.

*5-3.14.2 Parking Spaces:* Residential homes adjacent to Public Right-of-Way shall provide for a minimum of two (2) parking spaces. This requirement may be met by any combination of garage parking or driveway parking, all of which shall be on private property.

*5-3.14.3 Driveway Width:* The width of the driveway may not be greater than thirty (30) percent frontage. Therefore, for example, the maximum driveway width for a property with sixty (60) feet of frontage is eighteen (18) feet. To place a circular driveway on property with sixty (60) feet of frontage would require that the driveway width be limited to nine (9) feet.

An exception to limitation on driveway width may be permitted when there is positive drainage (drainage inlets) within three hundred (300) feet of the property, subject to approval by the Highway Construction and Engineering Division.

*5-3.14.4 Material:* Only brushed concrete may be installed by homeowners who do the work themselves. Stamped concrete, paver blocks and asphalt may only be installed by a contractor licensed to do such work in Broward County. Brick pavers are not permitted on arterial and collector roads.

*5-3.14.5 Specifications:* Concrete driveways shall be a minimum of six (6) inches in thickness, have a strength of 3000 p.s.i., and have no steel or mesh reinforcement for the portion of the driveway in County right-of-way. Also, regardless of material used, the driveway should be sloped away from the roadway, and a three (3) inch dip should be placed near the center of the swale. Base material shall be compacted to 98% of maximum density, per AASTHO T-180 (see Drawings 14, 15 and 16 in Appendix A).

*5-3.14.6 Security Requirements: See Chapter 5, Section 5-2.2 for security requirements.*

*5-3.14.7 Swale Irrigation:* See Chapter 17, Section 17-2.2 for swale irrigation requirements.

*5-3.14.8 Driveway on Property Side of Right-of-Way*: A separate permit is required for construction of the portion of the driveway on the property side of the right-of-way line, and is subject to Broward County Building Department requirements.

**5-4 CONFLICT STRUCTURES**: All Conflict maintenance access structures shall have approval of the appropriate State and County reviewing agencies before being permitted by the Highway Construction and Engineering Division, and shall conform to the requirements of Chapter 10, Section 10-9, and Drawing 21 in Appendix A of

these standards. This shall apply to field changes as well as conflict structures proposed in the design of the project in question.

**5-5 SLEEVING:** Unless otherwise approved, sleeving shall be provided for all future utility crossings, to the extent that needs can reasonably be anticipated, in order to minimize cutting and patching of new pavement. Size, material and purpose of the sleeve shall be indicated on the plans. All sleeves shall be ductile iron or steel pipe.

High density polyethylene (HDPE) sleeving may not be used without prior approval by the Highway Construction and Engineering Division.

**5-6 RESTORATION OF PAVEMENT:** Wherever curb removal or installation, utility or drainage installation or removal, or other construction disturbs existing pavement, that pavement so influenced shall be restored by repair/ replacement to full lane width.

Wherever pavement is damaged by construction equipment or its operation, that pavement so influenced shall be repaired/replaced to full lane width.

Diagonal patching is not allowed without prior approval by the Highway Construction and Engineering Division.

# CHAPTER 6 – ARTERIAL AND COLLECTOR ROADS - TECHNICAL REQUIREMENTS

## 6-1 ROADWAYS

*6-1.1 Minimum Design Criteria:* As a minimum, roads designated as arterial or collector roads and related facilities shall be designed in substantial accordance with the: "The Green Book," "Design Standards," and the "Utility Accommodation Guide Manual," all as published by FDOT; "The Land Development Code," Chapter 5, Article IX of the "Broward County Code of Ordinances," EPD's "Code of Regulations," Chapter 27, Section 406e "Design Criteria," Sub-Section 1.C.3 entitled "Flood Protection" and the provisions of the "Americans With Disabilities Act."

*6-1.2 Construction Criteria:* Construction materials and methods shall meet the requirements of FDOT "Standard Specifications for Road and Bridge Construction" and supplements, except as modified herein, by EPD's "Code of Regulations," Chapter 27, Section 406e and by the provisions of Chapter 3 of this document. All materials shall be new and unused.

*6-1.2.1 Temporary Facilities:* Temporary facilities, unrelated to any ongoing construction in public right-of-way, and intended to provide an essential service for a period of time not to exceed one (1) year, may be constructed in public right-of-way, contingent upon Highway Construction and Engineering Division approval of project plans and specifications, and issuance of a Highway Construction and Engineering Division Construction Permit.

*6-1.2.2 Temporary Facilities Constructed to Provide or Maintain an Essential Feature:* In cases where temporary facilities must be constructed to provide or maintain an essential feature around portions of a public right-of-way for public safety or convenience during construction, such temporary facility shall be clearly drawn in sufficient detail on standard size drafting sheets, and submitted to the Highway Construction and Engineering Division for review and approval prior to implementation.

*6-1.3 Typical Sections:* A typical section shall be shown on all plans. For submittal of a new roadway or new through lanes, the applicant shall submit sketches of the proposed typical right-of-way sections to the Highway Construction and Engineering Division for approval prior to beginning the preparation of plans. Proposed typical right-of-way cross sections shall follow the format and general provisions shown in Drawings 1 through 6 in Appendix A. The Highway Construction and Engineering Division may require submittal of a traffic study that evaluates the anticipated traffic volume and the capacity of the new roadway based on Florida Department of Transportation standards.

The typical sections shall show or note all of the applicable design elements outlined in the "Green Book." Where determination of the "ultimate through lane" is necessary, it shall be made in this review.

*6-1.4 Minimum Safety Criteria:* The minimum safety criteria for design of roads and streets in Broward County shall meet or exceed all standards referenced in Sections 6-1.1 and 6-1.2 of this Chapter.

*6-1.5 Guardrail:* The following policy is to be implemented in the design of all roadway construction involving lakes and canals when it is necessary for such waterways to exist adjacent and parallel to the roadway.

For the purpose of this policy, a canal/lake is defined as a constructed or natural water body having a bottom elevation lower than one (1) foot below the control elevation of the area. The top of bank of any lake or canal shall be at least one (1) foot above the control elevation.

*6-1.5.1 Minimum Distance to Canal:* The distance from the outside edge of the ultimate through travel lane to the top of the lake/canal ultimate side slope (top of bank) nearest the road shall be no less than sixty (60) feet for highways with design speeds of 50 mph or greater. For highways with design speeds less than 50 mph, this minimum distance may be reduced to fifty (50) feet for rural highways or forty (40) feet for urban (curb and gutter) highways. When a new lake/canal or roadway alignment is required, (at less than the ultimate cross-section), distances greater than those above should be provided, if possible, to accommodate possible future improvements to the roadway (widening, etc.).

*6-1.5.2 Installation of Protection:* Installation of guardrail, or other approved protective devices, is required throughout all areas where it is impossible to meet the above minimum criteria. For canals located on the outside of curves sharper than two (2) degrees, greater offset widths or construction of guardrail is required (see FDOT “Design Standards”).

When guardrail is required for canal protection, it should normally be placed at or near the edge of the clear recovery area. The distance from the outside edge of the shoulder to the face of guardrail should, in all cases, be greater than twelve (12) feet when guardrail is not constructed at the edge of the shoulder. The roadway front slope back of guardrail may be steepened to a slope of 2:1.

A continuous strip of asphalt four (4) inches thick and three (3) feet minimum width, centered on the guardrail, shall be placed at all new guardrail installations in unpaved areas.

*6-1.5.3 Installation of Guardrail at Existing Bus Stop:* At all existing bus stop locations, where guardrail is proposed to be installed, openings shall be provided in the guardrail at appropriate points for passenger access. If so doing would create a hazardous condition, the bus stop should be relocated instead

*6-1.5.4 Objects Unprotected by Guardrail:* All objects within public right-of-way that are not protected by guardrail shall be of “breakaway” design.

*6-1.6 Subgrade:* The entire width of public right-of-way shall be demucked before construction of the roadbed begins. No material of FDOT Class A-5, A-7 or A-8 shall be allowed. All material supporting the roadway and shoulders shall have a minimum Load Bearing Ratio (LBR) of forty (40). The top twelve (12) inches of the

undisturbed soil shall be compacted to 100% of maximum dry density as per AASHTO T-99-C. Subgrade shall be checked for conformance with approved plans.

*6-1.7 Bases*

*6-1.7.1 Material:* Limerock of the Miami formation shall be used, having a minimum percentage of carbonates of calcium and magnesium of 70%, and a minimum LBR of 100. Limerock bases shall be constructed in lifts not to exceed six (6) inches. The finished surface of all roadway bases shall be tested by "boarding" or by other approved method, and shall show no deviation from the required elevation greater than one-quarter (1/4) inch in any fourteen (14) foot segment. Base material shall be compacted to a density of not less than 98% of maximum dry density as determined by AASHTO T-180.

*6-1.7.2 Alternative Base Materials:* The permittee may propose alternate base materials for use in lieu of limerock. Such proposal shall be submitted to the Highway Construction and Engineering Division, whose approval for the substitution shall be obtained before the proposed material may be incorporated into the project.

*6-1.7.3 Start of Base Course Construction:* The requirements of Chapter 3, Section 3-4.5.4 apply.

*6-1.8 Wearing (Surface) Courses:* A tack coat shall be used between paving courses, and a prime coat shall be used on the finished rock base. Only virgin materials may be used in wearing courses, unless otherwise approved, in writing, by the Highway Construction and Engineering Division.

*6-1.8.1 Surface Course Construction:* See Drawing 6, Sheet 2 of 2 in Appendix A for surface course construction requirements.

Recycled asphalt used in the road mix shall not exceed 10%.

*6-1.8.2 Asphaltic Concrete Aggregate:* Miami Oolite only shall be utilized as an asphaltic concrete aggregate.

*6-1.8.3 Wearing Course:* Wearing courses shall not be placed until the following has occurred:

1. A walk through has been conducted to determine if there is any remaining work that might cause damage to the final lift.
2. All landscape work that might cause damage to the final lift is complete.
3. All construction equipment has been inspected for leaks of fluids that may blemish or damage the final lift. This equipment shall be repaired, or removed from the job-site.
4. All underground utilities are installed and accepted, and a finished Rock Survey has been submitted to and accepted by the Highway Construction and Engineering Division.

*6-1.8.4 Alternate Roadway Surfacing Materials:* Alternate roadway surfacing materials such as concrete, brick pavers, stamped concrete, etc., shall be considered on a case by case basis. Brick pavers are not permitted on arterial and collector roads, unless otherwise approved by the Highway Construction and Engineering Division.

*6-1.9 Shoulders:* See Drawing 6, Sheet 2 of 2 in Appendix A for shoulder construction requirements.

All shoulders shall have a minimum width of eight (8) feet where conditions permit, but in any event, no less than six (6) feet. Where possible, a width of four (4) feet of the shoulder shall be paved as one-way bike lane. Where this area is needed for drainage, the outside lane shall be designed and constructed a minimum of two (2) feet wider than the interior lanes.

For unpaved shoulders, materials shall be stabilized to an LBR of at least 40.

For paved shoulders, pavement shall be one (1) inch minimum of Type S-III over an eight (8) inch compacted and primed limerock base. Limerock base shall be compacted to a minimum density of 98% of AASHTO T-99C.

*6-1.10 Curb/Gutter:* See Drawing 6, Sheet 2 of 2 in Appendix A for curb/gutter construction requirements. All type “F” curb elements shall be placed so that they are one-quarter (1/4) inch higher than adjacent inlet frames and grates. Concrete shall have a minimum twenty-eight (28) day strength of 3000 p.s.i.

Unless otherwise approved, all curb elements shall have a limerock foundation or “pad” with a minimum LBR of 100 and minimum carbonate content of 70%, Pads shall be at least four (4) inches thick, extending six (6) inches (min.) beyond the edges of the concrete compacted to 98% of maximum density, per AASHTO T-180. The use of other materials shall be considered on a case by case basis.

*6-1.11 Traffic Separators:* Traffic Separators, less than four (4) feet in width between face of curbs, shall be paved with a six (6) inch (minimum) thickness of concrete (refer to FDOT “Design Standards,” Index 302).

*6-1.12 Swales:* Bottoms of swales, measured from top of turf, shall be at least six (6) inches below the edge of road pavement. Swales shall be compacted to 95% of maximum density, per AASHTO T-99-C, and seeded, mulched and fertilized, or sodded, if not paved. For typical sections through swales and sidewalk areas see Drawings 15 and 16 in Appendix A.

Where drainage is dependent upon percolation in the swale, sufficient testing shall be performed to verify the validity of the design assumptions and calculations, and the results shall be submitted, together with the design calculations and drawings, to the Highway Construction and Engineering Division for evaluation of the proposed system. If conditions so indicate, a positive drainage system shall be required.

When swale work is being performed, trucks that are blocking lanes should be parked on a side street whenever practical.

Upon completion of construction in the swale with the exception of final seeding or sodding, swale percolation shall be re-tested as directed by the Highway Construction and Engineering Division, to verify that the actual percolation is consistent with the design values. The results of these tests shall be submitted to the Highway Construction and Engineering Division prior to final inspection.

Where a designated bus stop exists or is planned in any public-right-of way, anyone developing, redeveloping or improving public right-of-way, except for the owner of a single one-family or duplex residence lot abutting such bus stop, shall provide an approved paved pedestrian access conforming with the provisions of the Americans with Disabilities Act for persons exiting or seeking to enter a bus. If such pedestrian access obstructs the flow of water in the swale, a culvert shall be provided to allow the water flow freely past the obstruction. The swale, in the vicinity of such paved access, shall be sloped up to the top of the paved access edge to avoid creation of a hazardous condition. At locations where guardrail exists, the guardrail shall be modified to provide the required access. Where guardrail is less than 600' in length, if access cannot be provided without creating a hazardous condition, the bus stop should be located elsewhere.

*6-1.13 Drainage:* All drainage facilities and systems within public right-of-way shall be designed and constructed in accordance with the requirements of the Environmental Protection Department, the Surface Water Management Division "Management of Surface Water Discharge and Non-Point Source Pollution" Regulations, Chapter 27, Section 405, and FDOT "Utility Accommodation Guide," except as modified herein, and with the provisions of Chapter 3 of this document.

*6-1.13.1 Pipe:* All drainage pipe installed under or within five (5) feet of existing or proposed paved areas (including curbs and sidewalks or bike paths) shall be reinforced concrete conforming to ASTM Specification C-76 or ASTM C-1450. Use of reinforced concrete pipe meeting ASTM C-1450 shall be approved on case by case basis. The use of high density polyethylene (HDPE) pipe is prohibited unless otherwise approved, in writing, by the Highway Construction and Engineering Division.

The minimum pipe size to be used shall be fifteen (15) inches in diameter.

All plugs in pipes, placed during construction, shall be removed prior to final inspection unless specifically approved to remain.

Pipes with spider cracks shall be rejected.

Filter fabric shall be placed over the tops of all pipe joints.

All drainage pipe in public right-of-way shall have a minimum cover as shown in FDOT "Design Standards," Index 205, but in no case less than twenty-four (24) inches unless otherwise approved by the Highway Construction and Engineering Division.

Concrete exfiltration pipe shall be laid such that slits are only at 3 o'clock and 9 o'clock.

Filter fabric in exfiltration trench shall have a minimum overlap of twelve (12) inches. All overlaps of filter fabric shall be on top and/or bottom of the trench. Overlaps on sides of exfiltration trench shall be avoided.

Exfiltration systems may not be placed under a roadway.

For drainage pipe installed in exfiltration trench refer to Drawings 17 and 18 in Appendix A.

Culverts in or crossing public right-of-way shall have a minimum of five (5) feet of cover unless otherwise approved by the Highway Construction and Engineering Division.

*6-1.13.2 Slope Protection:* Slope protection at outfalls and culvert ends shall be concrete revetment mats having a minimum thickness of four (4) inches, unless an alternate design is approved.

*6-1.13.3 Structures:* All drainage structures shall be of precast, reinforced concrete unless otherwise approved. All precast concrete structures shall meet the requirements of ASTM Standard No. C-478. Walls shall be not less than eight (8) inches thick and top and bottom slabs shall be not less than eight (8) inches thick.

Walls and floor slabs shall be fully doweled together and top slabs shall have an approved anchorage to prevent displacement. Walls shall extend a minimum of six (6) inches above the top of the highest pipe hole, three (3) inches minimum each side of each opening and, for inlets, twelve (12) inches minimum below the invert of the lowest pipe, unless otherwise approved. Concrete for drainage structures shall have a minimum compressive strength of 4000 p.s.i. at twenty-eight (28) days. All exposed brick shall be coated with one-half (½) inch, minimum thickness of cement mortar, and all voids around pipes and structures shall be grouted.

All concrete structures shall be delivered to the job-site bearing the stamp of an independent Florida certified Engineering Testing Laboratory, signed and dated by the laboratory's inspector unless certified by the manufacturer as meeting FDOT standards. These structures shall be un-patched and uncoated and shall remain so until approved by the Highway Construction and Engineering Division Inspector. For drainage structure details see Drawing 19 in Appendix A.

Maintenance access structures shall have a minimum dimension of four (4) feet between opposing walls.

Conflict Structures shall have not less than two (2) feet clearance between penetrating pipes and parallel concrete walls and shall measure not less than four (4) feet between other opposing walls. They shall have a minimum wall thickness of six (6) inches unless otherwise approved. For conflict structure details see Drawing 21 in Appendix A.

Type "C" Inlets are not permitted under paved areas, and are only permitted in swales.

Control structures shall have either two (2) standard access tops or one (1) in the center over the weir with a minimum opening of three (3) feet in accordance with FDOT "Design Standards," Index 201.

Concrete aprons, as approved by the Highway Construction and Engineering Division, shall be provided at all inlets in swales. Aprons shall extend three (3) feet from the inlet structure on all sides, except that on the side facing the road it shall extend to the edge of pavement. Aprons shall be a minimum of six (6) inches thick and shall have a minimum twenty-eight (28) day strength of 3000 p.s.i. For apron details see Drawing 20 in Appendix A.

Asphalt aprons are not permitted, unless otherwise approved by the Highway Construction and Engineering Division.

*6-1.13.4 Baffles:* Where a semi-cylindrical baffle is to be installed in a drainage structure, the minimum distance between the baffle and the opposing wall shall be two (2) feet, and the minimum distance between the baffle and the adjacent wall shall be a minimum of one (1) foot or three-fourths (¾) of the radius of the baffle, whichever is greater.

Maintenance access structure covers shall be placed directly over the baffle, with the inside edge of the wall aligned with the inside wall of the cover opening. For a structure up to five (5) feet inside diameter, provide one (1), three (3) feet diameter cover directly over the baffle.

For a structure with more than a five (5) feet inside diameter, two (2), two (2) feet diameter covers shall be provided. The covers shall be placed directly over the baffles, and if only one baffle exists then the second cover shall be placed on the opposite side of the structure.

*6-1.13.5 Top Frames, Grates and Covers:* Top frames, grates and covers for all drainage structures shall be of traffic bearing design and shall be a cast of close-ground grey iron conforming to ASTM Standard A48, Class 30 with a minimum lid weight of 165 lbs. and a minimum combined weight of 410 lbs., unless otherwise approved by the Highway Construction and Engineering Division.

Castings shall be the following types, as manufactured by United States Foundry and Manufacturing Corp. or approved equal:

- Closed-lid maintenance access structure: Type 420 Frame, Type A or C cover
- Inlet-maintenance access structure: Type 3177 Frame, Type 5655 Grate
- Curb-type (FDOT #five and #6) inlets: Type 5160 Frame, Type 6310 Grate
- Curb-type (FDOT #9) inlet: Type 5130 Frame, Type 6168 Grate
- Valley gutter (FDOT type "V") inlet: Type 5106 Frame, Type 6149 Grate
- Ditch bottom (FDOT "C") inlet: Type 4155 Frame, Type 6212 Grate
- Ditch bottom (FDOT "E") inlet: No Frame, Type 6290 Grate
- Ditch bottom (FDOT "H") inlet: No Frame, Type 6292 Grate

Castings for other applications shall be considered on a case by case basis. Steel gratings may not be used in public right-of-way unless specifically approved by the Highway Construction and Engineering Division for a particular location. All frames placed on top of slabs shall be on a minimum of two (2) courses and a maximum of four (4) courses of brick, to facilitate adjustments to conform to changes in the finished grade.

All inlet lids and grates shall be designed and placed to allow for safe traversing by pedestrians and bicycles.

All access openings in pavement shall be in accordance with Drawing 13 in Appendix A.

*6-1.13.6 Testing:* All tests shall be conducted by the permittee in the presence of a representative of, or the Engineer of Record, and a representative of the Highway Construction and Engineering Division.

All drainage installations shall be tested for leakage prior to backfilling. Leakage shall not exceed five-hundred (500) gal/day/inch of diameter/mile of pipe, under a minimum hydraulic head of two (2) feet. Any portion with leakage exceeding the allowable shall be corrected and retested. This shall be repeated until all portions of the installation meet the leakage requirements.

All drainage pipes and French drain pipes, above the water table, or as directed by Highway Construction and Engineering Division, shall be lamped prior to placement of the final lift of asphalt.

*6-1.13.7 Cleaning and Repair of Structures and Pipes:* Underwater inspection of pipes and structures shall be performed by experienced personnel trained in evaluating structural breaks, bad joints, and obstacles, by closed-circuit television or man entry. Dive crews shall obey all OSHA rules that apply to confined spaces and diving operations.

A permittee may not de-water a Broward County drainage system for cleaning or repair services without written approval from the Highway Construction and Engineering Division. A permittee may not install a plug in a Broward County drainage system without written approval from the Highway Construction and Engineering Division.

In order to verify the cleaning/repair of a submerged structure or pipe, a video tape of the structure/pipe shall be made upon completion of the project. Underwater video inspections shall be performed after the removal of plugs in order to verify that the plugs were removed.

*6-1.13.8 Installation of Cured in Place Pipe (CIPP):* Cured in place pipe shall be installed in accordance with, and meet the specifications of the American Society of Testing Materials (ASTM) and the National Association of Sewer Service Companies (NASSCO).

*6-1.13.9 Certification:* Prior to scheduling final inspection for acceptance of drainage systems, the Engineer of Record shall provide to the Highway Construction

and Engineering Division, one (1) set of certified as-built drawings signed and sealed by a Professional Surveyor and Mapper registered in the State of Florida together with the Engineer of Record certification. These drawings shall show all drainage structures, with their locations, rim and invert elevations, and structure numbers.

In every case, when the design drawings have been produced using a CAD system, the "as-built" or record drawings shall also be produced on the CAD system and the Engineer of Record shall also submit a copy of the magnetic medium containing the information from which the as-built drawings were produced.

*6-1.13.10 Headwalls and Revetments:* Unless otherwise approved, where embankment slopes at culvert ends and outfalls are steeper than 1:3, approved concrete endwalls shall be installed. Where embankment slopes are 1:3 or flatter, approved revetments shall be installed. This preferred type of revetment is the poured concrete-in-fabric form type, with a "quilted" appearance. Under no circumstances shall paper wrapped rip-rap be allowed.

*6-1.14 Sidewalks:* Sidewalks shall be of unreinforced Portland Cement Concrete and shall be as shown in Drawing 14 in Appendix A, unless otherwise approved. Alternate materials of construction, such as asphaltic concrete, and special surface treatments, such as pavers, tiles, etc., shall be considered when requested by the Engineer of Record.

Narrow grass strips (one (1) to three (3) feet) between sidewalk and curb and gutter shall be eliminated by increasing the width of sidewalk. Sidewalks adjacent to curbs shall be six (6) feet wide, unless otherwise approved by the Highway Construction and Engineering Division.

*6-1.14.1 Slope:* Sidewalks shall have a maximum transverse slope of 0.02 feet per foot, and a minimum transverse slope of 0.01 feet per foot, toward the swale or gutter and shall be given a transverse hair broom finish.

*6-1.14.2 Thickness and Strength:* Sidewalks shall have a minimum thickness of six (6) inches, a minimum twenty-eight (28) day strength of 3000 p.s.i., and a maximum allowable slump of four (4) inches. Wire or steel reinforcement is not permitted.

*6-1.14.3 Obstructions:* No unnecessary obstructions shall be placed in or on sidewalks unless specifically approved, on a case by case basis, by the Highway Construction and Engineering Division. All obstructions in or on sidewalks shall be so located that maximum clear width is maintained.

*6-1.14.4 Maintenance of Traffic – School/Pedestrian:* The provisions of Chapter 3, Section 3-1.3.7, and Section 3-1.3.9 apply.

*6-1.15 Swales, Driveway Connections and Sidewalks:* Swales, driveway connections and sidewalks shall be maintained by the owners of the abutting properties, in accordance with Drawings 14, 15 and 16 in Appendix A, as applicable, at no expense to Broward County.

Clear sight zones shall be provided and maintained in accordance with the provisions of FDOT "Design Standards," Index 546 (as amended), and in accordance with the provisions of the Broward County Land Development Code.

Swales that are paved or are proposed to be paved and shall exceed thirty (30) percent of lot frontage or eighteen (18) feet, whichever is greater, shall be required to install drains as shown on Drawing 17 in Appendix A, unless a positive drainage system has already been installed or is proposed to be installed by the County. All swale drainage facilities not part of a positive, right-of-way drainage system shall be maintained by the owner of the abutting private property.

For a duplex or a single family home, no single driveway pavement shall exceed eighteen (18) feet. Where a lot is in a location or orientation that allows for construction of a circle driveway, then the combined driveway pavement widths shall not exceed twenty-eight (28) feet (for example an eighteen (18) foot wide driveway, two-car driveway with a ten (10) foot circle driveway). Driveways shall be setback a minimum of five (5) feet from the side property line unless approved by the Highway Construction and Engineering Division based upon a field inspection which determines that there shall be adequate onsite drainage for storm water retention.

Multi-family and non-residential development shall be designed with an onsite parking lot and driveways which comply with the standards of the Broward County Land Development Code.

Driveways that exceed these standards shall be reviewed on a case by case basis according to standard acceptable engineering practices and shall require approval by the Highway Construction and Engineering Division Director or designee.

Gravel shall not be placed in swales, and parking in swales is prohibited, in accordance with Chapter 25, Section 25.19, of the Broward County "Administrative Code."

*6-1.16 Grassing/Seeding/Mulching/Sodding/Fertilizing:* Whenever a suitable length of roadway slope(s) or adjacent areas have been graded, they shall be grassed at the earliest practical time, and in all cases, before the final paving course. In most cases, grass seed should be used. In areas where erosion and/or growing conditions may be a problem, solid sod should be installed. All grass placed in public right-of-way shall be Argentine Bahia unless a different variety is approved. The permittee shall maintain the grass, including watering and mowing until the project is accepted. Areas to be grassed shall have a growing stand of grass for a period of at least one (1) year after completion/approval of the project. All grassed areas shall be mowed at least once prior to acceptance of the project.

*6-1.17 Restoration:* The entire work area utilized for the performance of any permitted work shall be restored by the permittee to meet current standards for new construction.

*6-1.18 Finished Rock Survey:* Record Drawings of the finished rock base drawn at the same scale as the approved construction drawings shall be submitted to the

Highway Construction and Engineering Division for approval before proceeding with an asphalt pavement.

These drawings shall be signed and sealed by a Professional Surveyor and Mapper registered in the State of Florida, and shall show finished rock base elevations and offsets at centerline, edge of median and edge of pavement, plus elevations of bottom of swale or flow line of gutter, top of curb and right-of-way line, at high and low points, intersections and changes in slope.

Elevations shall be verified and shown at intervals not to exceed three-hundred (300) feet, measured along the profile grade line, for projects over fifteen-hundred (1500) feet in length; every one-hundred (100) feet for projects five-hundred (500) feet to fifteen-hundred (1500) feet in length; and, every fifty (50) feet for projects under five-hundred (500) feet in length.

These elevations shall be depicted on a set of plans at the same scale, with sufficient clarity to make judgment of acceptability possible. The drawings shall also bear the certification of a P.E. registered in the State of Florida, stating that the installation shown thereon has been made in substantial conformance with the approved drawings.

Compaction shall be verified by an independent certified Engineering Testing Laboratory by making Field Density Tests of each layer of compacted material at prescribed intervals before the succeeding layer is placed.

Test reports and rock “as-built”/record drawings shall be submitted to the Highway Construction and Engineering Division and be approved before paving operations begin.

*6-1.19 Final Inspection and Acceptance:* After construction is completed and all certifications, record drawings and other required documents have been submitted to the Highway Construction and Engineering Division, and accepted, but before the one (1) year Maintenance period for which security has been posted begins, the permittee shall request a final inspection of the project. The Highway Construction and Engineering Division, all other interested parties shall jointly perform such inspection to determine the acceptability of the project for service. Following the inspection, any noted defects shall be corrected by the permittee, after which the Highway Construction and Engineering Division and other maintaining agencies, shall issue a notice of approval. The date of the notice of approval shall be the start of the one (1) year warranty period.

## 6-2 PAVEMENT MARKING/SIGNING/SIGNALIZATION/SCHOOL FLASHERS

*6-2.1 Pavement Markings - General:* The design and construction of pavement marking systems shall be in accordance with the following standards:

- Broward County “Traffic Engineering Standards and Specifications”
- Broward County “Neighborhood Traffic Management Manual”
- FHWA “Manual on Uniform Traffic Control Devices”

- FDOT “Design Standards”
- FDOT “Standard Specifications for Road and Bridge Construction”

*6-2.1.1 Pavement Marking Plan:* Pavement Marking and Signing plans shall be included with each set of drawings submitted to the Highway Construction and Engineering Division, as part of the total paving and drainage plan submittal for review and approval. These plans shall show all new markings including tie-ins to existing markings. Removal of conflicting markings shall be shown. Materials shall be specified.

The location and type of raised reflective pavement markers shall be identified, as shown on Drawings 26 and 27 in Appendix A. FDOT pay item numbers shall be used.

*6-2.1.2 Permanent Pavement Markings:* Permanent pavement markings shall consist of alkyd-based extruded or ribbon thermoplastic or preformed plastic material. All such materials shall be fully retro-reflectorized.

*6-2.1.3 Temporary Pavement Markings:* Temporary pavement markings may be used during intermediate phases of road construction or where further construction of the road is imminent (generally within one (1) year). Temporary markings shall consist of paint or traffic tape. All such markings shall be fully retro-reflectorized.

*6-2.1.4 Old Pavement Markings:* Unless otherwise approved, old pavement markings or conflicting pavement markings shall be “removed” by covering with a full lane width of pavement resurfacing, sandblasting, or water blasting prior to installing new pavement markings, the full length of the project or that portion in which the construction and required new markings create conflicts with the old. The extent of the resurfacing/removal required shall be determined jointly by the, Highway Construction and Engineering Division and the Traffic Engineering Division, in the field, based upon observation of field conditions.

*6-2.1.5 Construction/Resurfacing:* Pavement markings (either permanent or temporary) shall be installed as soon as practical following paving. The pavement marking permittee shall be onsite at the start of the construction or resurfacing project. In the event that a road is placed in service, the temporary or permanent pavement striping shall be applied by the end of each day's operation. In the event of inclement weather the project shall be striped as soon as practical, once the weather has improved. Any road placed in service without striping shall have the traffic lanes delineated in accordance with part six (6) of FHWA “Manual on Uniform Traffic Control Devices.”

*6-2.1.6 Storage of Barricades and Materials:* Barricades and materials may not be stored in public right-of-way.

*6-2.1.7 Pavement Markings on New Asphalt:* Pavement markings are required on all new asphalt, prior to night fall.

*6-2.1.8 Pavement Marking Requirements:* All pavement markings shall be visible at night, and shall be retro-reflective.

*6-2.2 Signs - General:* The design and construction of traffic signs shall be in accordance with the following standards:

- Broward County “Traffic Engineering Division Standards and Specifications”
- Broward County “Neighborhood Traffic Management Manual”
- FHWA “Manual on Uniform Traffic Control Devices”
- FDOT “Design Standards”
- FDOT “Standard Specifications for Road and Bridge Construction”

*6-2.2.1 Signing Plan:* Signing and pavement marking plans shall be included with each set of drawings submitted to the Highway Construction and Engineering Division, as part of the total paving, grading and drainage plan submittal set for review and approval. The plan shall show all new signs and all existing signs to be removed. Where appropriate, existing signs to remain shall be shown. FDOT pay item numbers shall be used. For sign and pavement marking details see Drawings 25, 26 and 27 in Appendix A.

*6-2.2.2* All "STOP," 4-WAY (R1-3 or R1-4), "DO NOT ENTER," "WRONG WAY," and "YIELD" signs shall be fabricated entirely with Diamond Grade (3M VIP #3990) material or equal. "STREET NAME" signs and "OTHER" signs shall be fabricated using high intensity grade (3M #3870) material or equal. Signs within the parking series may be Engineering Grade (3M #3290) material or equal. Post-mounted signs shall be mounted on single or double steel U-Channel posts, as shown on Drawing 25 in Appendix A. Tubular posts shall not be used.

*6-2.2.3 Maintenance of Signs during Construction:* All existing regulatory, warning and street identifier signs that are applicable, as determined by the Traffic Engineering Division shall be maintained during construction. All temporary signs shall conform to the MUTCD. Existing guide signs that are determined to be applicable shall be maintained. Existing signs that are not applicable shall be covered or removed.

*6-2.2.4 Design of Supports:* Shop drawings and quantities for overhead sign structures, special designs for ground sign structures, and large guide sign panels shall be submitted to the Highway Construction and Engineering Division for approval. To determine a sign item number, profile size, wind zone and area; refer to FDOT “Design Standards.”

Minimum vertical clearances for overhead signs shall be as detailed in FDOT “Design Standards.”

*6-2.3 Signalization - General:* The design and construction of traffic signals shall be in accordance with the latest editions of the following standards:

- Broward County “Traffic Engineering Division Standards and Specifications”
- Broward County “Neighborhood Traffic Management Manual”
- FHWA “Manual on Uniform Traffic Control Devices”

- FDOT “Design Standards”
- FDOT “Standard Specifications for Road and Bridge Construction”

*6-2.3.1 Materials:* All materials shall be on FDOT Approved Products List (APL), and must be approved by the Traffic Engineering Division prior to installation. All materials and workmanship shall meet the requirements of the following publications:

- FHWA “Manual on Uniform Traffic Control Devices”
- The National Electrical Code
- Industrial Control Standards of NEMA
- Applicable state and local agency standards

All materials used shall be as specified by the Traffic Engineering Division.

*6-2.3.2 Signalization Plan:* No work may be performed at any existing or proposed traffic signal location without a plan approved by the Traffic Engineering Division. No changes shall be made to any approved signalization or interconnect plans, equipment specifications or installation details without prior written approval of the Traffic Engineering Division. For additional requirements contact the Traffic Engineering Division.

*6-2.3.3 Notification:* The Traffic Engineering Division Systems Engineer shall be notified in writing at least forty-eight (48) hours prior to any work being performed at a signalized location in order to properly transfer maintenance responsibilities. Either fax the information to the Systems Engineer or mail it to:

Systems Engineer
Broward County Traffic Engineering Division
2300 West Commercial Boulevard
Fort Lauderdale, Florida 33309

*6-2.3.4 Shop Drawings:* The permittee shall submit to the Traffic Engineering Division for approval, the manufacturer’s descriptive literature and technical data which fully describes the types of signal equipment proposed for use, and shall not order this equipment prior to receipt of such approval.

*6-2.3.5 Record Drawings:* The Traffic Engineering Division shall be provided with two (2) sets of “as-built” drawings of the traffic signal installations, at the time of inspection.

*6-2.3.6 Equipment Removal:* All signalization equipment that is removed except as further noted or as directed by the Engineer of Record shall properly be disposed of at the permittee’s expense. All poles without foundations (including uprights and mast arms), the control cabinet and all of its contents, any above-ground detection, and all LED modules (vehicle and pedestrian) shall be disassembled into their component parts, tagged as to location, packaged as needed for protection from damage and delivered to:

Broward County Traffic Engineering Division
Operations Building
2300 West Commercial Boulevard
Fort Lauderdale, Florida 33309

The Warehouse Manager is to be contacted at least forty-eight (48) hours prior to delivery.

Written acknowledgement of equipment receipt shall be obtained from the Warehouse Manager in the form of a signed receipt bearing the permittee's letterhead. This itemized receipt must state that all of the equipment as described above from each location was returned to the Traffic Engineering Division in good condition. The permittee shall present this receipt to the Traffic Engineering Division at the time of signal inspection. Absence of such receipt shall be recorded on the punch list as an item to be corrected prior to final approval of the installation.

*6-2.3.7 Signal Turn-ons:* Early turn-on of any new signal installation shall only be permitted if authorized in writing by the Traffic Engineering Division. If early turn-ons are required the permittee shall be responsible for maintenance of the signals during that period. New signal locations shall not be placed on full color operation until the date of inspection except as stated above. New signal locations shall be flashed no less than three (3) days, nor more than fourteen (14) days prior to the inspection. Signal heads are to remain bagged with burlap or turned back until this time. Existing stop signs shall be removed by the permittee on the date of inspection when signals are placed into full color operation.

*6-2.3.8 Acceptance:* All new or modified traffic signals shall be inspected by the Traffic Engineering Division, which shall be notified in writing to the Systems Engineer when the work is completed and ready for inspection. The Traffic Engineering Division shall schedule and perform the inspection and issue a conditional acceptance if the work is satisfactory. Final acceptance of the work shall be issued upon successful completion of the punch list items and a sixty (60) day burn-in period.

*6-2.4 School Flashers - General:* The design and construction of school flasher signals shall be in accordance with the latest editions of the following standards:

- Broward County "Traffic Engineering Division Standards & Specifications"
- FHWA "Manual on Uniform Traffic Control Devices"
- FDOT "Design Standards"
- FDOT "Standard Specifications for Road and Bridge Construction"

*6-2.4.1 Materials:* All materials shall be on the FDOT Approved Products List (APL), and shall be approved by the Traffic Engineering Division prior to installation. All materials and workmanship shall meet the requirements of the latest editions of the following publications:

- FHWA "Manual on Uniform Traffic Control Devices"
- The National Electrical Code

- Industrial Control Standards of NEMA

All materials used in the work shall be as specified by the Traffic Engineering Division.

*6-2.4.2 School Flasher Plan:* No work may be performed at any existing or proposed school flasher location without an approved plan from the Traffic Engineering Division. No changes may be made to the approved school flasher plan, equipment specifications or installation details without prior approval of the Traffic Engineering Division.

*6-2.4.3 Shop Drawings:* The permittee shall submit to the Traffic Engineering Division for approval, the manufacturer's descriptive literature and technical data which fully describes the types of school flasher equipment proposed for use, and shall not order this equipment prior to receipt of such approval.

*6-2.4.4 Record Drawings:* The Traffic Engineering Division shall be provided with two (2) sets of "as- built" drawings of the school flasher installations at the time of inspection.

*6-2.4.5 Equipment Removal:* All school flasher equipment, except strain poles, that is removed shall be disassembled, tagged as to location, packaged as needed for protection from damage and delivered to:

Broward County Traffic Engineering Division
Operations Building
2300 West Commercial Boulevard
Fort Lauderdale, Florida 33309

The Warehouse Manager is to be contacted at least forty-eight (48) hours prior to delivery.

*6-2.4.6 School Flasher Turn-ons:* New school flasher locations shall not be placed in operation until the date of inspection. School flashers signal heads and sign panels shall be covered and bagged with burlap and turned back until this time.

*6-2.4.7 Acceptance:* All new or modified school flashers shall be inspected by the Traffic Engineering Division. When the work is completed, has been energized by FPL, and the locations are ready for inspection, the Traffic Engineering Division Special Projects Coordinator shall be notified in writing, either by e-mail or by fax. The Traffic Engineering Division shall then schedule and perform the inspection and issue a conditional acceptance if the work is satisfactory. Final acceptance of the work shall be issued upon successful completion of all punch list items.

## 6-3 BIKE PATHS/LANES (INDEPENDENT OF ROADWAY)

*6-3.1 Design Criteria:* Design of bike paths and lanes shall comply with the latest requirements/guidelines/standards of the Federal Highway Administration, FDOT "Bicycle Facility Planning and Design Manual," FDOT "Design Standards," FHWA "Manual on Uniform Traffic Control Devices," and Broward County "Traffic Engineering Division Standards and Specifications."

**6-4 RECREATIONAL TRAILS AND MULTI-PURPOSE PATHS:** Recreational Trails and Multi-Purpose Paths shall meet the combined applicable standards established for the anticipated uses. For example, a recreational trail intended for use by both cyclists and pedestrians shall be at least four (4) feet in width for pedestrian use plus an additional eight (8) feet wide for two-way bicycle traffic, as well as meeting bikeway standards for sight distances and turning radius.

# CHAPTER 7 – LOCAL ROADS - TECHNICAL REQUIREMENTS

## 7-1 CRITERIA

*7-1.1 Minimum Design Criteria:* The provisions of Chapter 6, Section 6-1.1 shall apply.

*7-1.2 Construction Criteria:* The provisions of Chapter 6, Section 6-1.2 shall apply.

*7-1.3 Typical Sections:* The provisions of Chapter 6, Section 6-1.3 shall apply.

A typical section shall be shown on all plans. For submittal of a new roadway or new through lanes, the applicant shall submit sketches of the proposed typical right-of-way sections to the Highway Construction and Engineering Division for approval prior to beginning the preparation of plans. Proposed typical right-of-way cross sections shall follow the provisions outlined in Section 5-192(c) (2) of the Broward County Land Development Code. The Highway Construction and Engineering Division may require submittal of a traffic study that evaluates the anticipated traffic volume and the capacity of the new roadway based on Florida Department of Transportation standards. The typical sections shall show or note all of the applicable design elements outlined in the "Green Book." Where determination of the "ultimate through lane" is necessary, it shall be made in this review.

*7-1.4 Safety Criteria:* The minimum safety criteria for design of local roads and streets in Broward County shall meet or exceed the applicable requirements of all standards referenced in Chapter 6, Sections 6-1.1 and 6-1.2 of this document.

Unless otherwise approved, the minimum clear recovery zone width in urban and suburban areas shall be six (6) feet for uncurbed roads and four (4) feet for curbed roads.

*7-1.5 Guardrail*: The provisions of Chapter 6, Section 6-1.5 shall apply, except that the minimum distance from the outside edge of the ultimate through travel lane to the top of the ultimate side slope (top of a bank) of any lake or canal shall be forty (40) feet. Reduction of this distance to twenty-eight (28) feet shall be considered on a case-by-case basis.

**7-2 CONSTRUCTION OF ROADWAY ELEMENTS:** All construction materials and methods shall meet the requirements of FDOT “Standard Specifications for Road and Bridge Construction,” except as modified hereinafter, and shall also meet the provisions of Chapter 3 of this document.

*7-2.1 Subgrades:* The provisions of Chapter 6, Section 6-1.6 shall apply.

*7-2.2 Bases:* Unless otherwise approved by the Highway Construction and Engineering Division, limerock bases shall be eight (8) inches thick and shall be constructed in two (2) - four (4) inch lifts. Limerock of the Miami formation shall be used, and shall have a minimum carbonate content of 60% and a minimum LBR of 100. All bases shall be primed as per FDOT standards.

Base material shall be compacted to a density of not less than 98% of maximum density as determined by AASHTO T-180.

*7-2.2.1 Alternate Base:* The provisions of Chapter 6, Section 6-1.7.3 shall apply.

*7-2.3 Wearing (Surface) Courses:* The surface course is to be one-and-one-half (1-1/2) inches of asphaltic concrete of FDOT Type S-III.

*7-2.4 Swales:* The provisions of Chapter 6, Section 6-1.12 shall apply.

*7-2.5 Drainage:* All drainage facilities and systems within public right-of-way shall be in accordance with the provisions of Chapter 6, Section 6-1.13, except that drainage pipe shall be reinforced concrete, or corrugated aluminum unless an alternate material is approved.

*7-2.6 Speed Humps:* Speed humps shall have a length of fourteen (14) feet, consisting of a three (3) foot ramp on each side, and an eight (8) foot flat top. The height of the speed humps shall be a maximum of three (3) inches. The standard width of the speed humps is twenty-two (22) feet; however, the actual width installed shall be determined based on field conditions and the lane widths. For speed hump details see Drawing 28 in Appendix A.

*7-2.7 Sidewalks:* The provisions of Chapter 6, Section 6-1.14 shall apply.

*7-2.8 Swale Paving, Driveway Connection and Sidewalk Maintenance:* The provisions of Chapter 6, Section 6-1.15 shall apply.

*7-2.9 Curbs, Gutters and Precast Inlet Tops:* Curbs, gutters and precast inlet tops shall be in accordance with the provisions of Chapter 6, Section 6-1.10, except that limerock bases need only have a calcium carbonate content of 60%.

*7-2.10 Grassing/Seeding/Mulching/Sodding/Fertilizing:* The provisions of Chapter 6, Section 6-1.16 shall apply.

*7-2.11 Restoration:* The provisions of Chapter 6, Section 6-1.17 shall apply.

*7-2.12 Finished Rock Survey:* The provisions of Chapter 6, Section 6-1.18 shall apply.

*7-2.13 Pavement Marking, Signing, Signalization and School Flashers:* The provisions of Chapter 6, Section 6-2 shall apply.

*7-2.14 Record Drawings and Certifications:* The provisions of Chapter 6, Section 6-1.18 shall apply.

*7-2.15 Final Inspection and Acceptance:* The provisions of Chapter 6, Section 6-1.19 shall apply.

## CHAPTER 8 – HIGHWAY BRIDGES - TECHNICAL REQUIREMENTS

**8-1 DESIGN CRITERIA:** The Bridges shall be designed in accordance with AASHTO Standard Specifications for Highway and Bridge Construction, and applicable FDOT Design Manuals. Design loading shall be HS-25-44.

**8-2 CONSTRUCTION CRITERIA:** Construction materials and methods shall meet the requirements of FDOT "Standard Specifications for Road and Bridge Construction" and FDOT "Structures Standards" except as modified herein.

*8-2.1 Pile Logs:* Legible driving logs of all bearing piles shall be kept by the permittee and a photocopy of each page shall be delivered to the Highway Construction and Engineering Division within three (3) working days after the driving is completed. Each page shall be signed by the person keeping the log and shall contain the following information for each pile: the type of pile; the date driven; the pile dimensions; the design loading of the pile; the twenty-eight (28) day concrete compressive strength; the ground elevation at the time of driving; the cutoff elevation; the blows per foot for each foot driven; the tip elevation after driving; the type, make and model of pile driver; the energy delivered to the pile upon impact; the operating pressure of the pile driver (if applicable), and any other relevant data or observations of the person keeping the log. Significant cracks and/or spalls of the pile concrete should be noted and shown on a sketch.

*8-2.2 Expansion Joints:* All roadway expansion joints shall be topped with a one (1) inch depth of poured sealant.

*8-2.3 Handrails:* Due to the high incidence of vandalism, the use of aluminum handrail should not be universal. The use of alternate installations should be considered, and submitted to the Highway Construction and Engineering Division for approval.

*8-2.4 Utility Crossings:* Unless otherwise approved and permitted by the Highway Construction and Engineering Division, only those items that are directly related to traffic safety or the function of the bridge shall be mounted or fastened upon any bridge under Broward County jurisdiction. Electric power or telecommunication services may utilize conduits placed within the bridge sidewalk concrete during the construction of the bridge subject to the approval of the Highway Construction and Engineering Division.

All metal mounted on or projecting from any County bridge shall be stainless steel, unless otherwise approved. Dissimilar metals shall be separated by an approved insulating device. During the design of the bridge, appropriate provisions shall be made for the incorporation or accommodation of other utilities.

*8-2.5 Retaining Walls:* Retaining walls shall be designed by a Florida Registered Engineer in accordance with sound Engineering principles. Walls may be of pile and slab, sheet pile, gravity, "reinforced earth" or other approved type. Plans, accompanied by design calculations, shall be submitted in triplicate to the Highway Construction and Engineering Division for approval before a construction permit can be obtained.

*8-2.6 Slope Protection*

*8-2.6.1 Slopes at Abutments:* Embankment slopes greater than 1:4 should receive erosion control treatment. The preferable method is to use a concrete filled revetment mat, placed over filter fabric material, as shown on Drawing 24 in Appendix A.

The revetment mat should extend from the front of the bridge abutment to a point at least two (2) feet below water level. It should also extend a minimum of ten (10) feet beyond the ends of the bridge abutments and return around the ends of the abutments and approach slabs.

Installation shall be as shown on Drawing 24 in Appendix A, and as per manufacturer's recommendations.

Alternate methods of slope protection shall be considered on a case-by-case basis.

*8-2.6.2 Slopes at Approach Slabs:* Slopes not required to receive treatment as described in Section 8-2.6.1, above, shall be grassed in accordance with Chapter 6, Section 6-1.16.

*8-2.7 Concrete Finishes:* All exposed surfaces of concrete traffic barriers, hand-rail barriers, sides of deck units and end bent wing walls shall receive a Class "5" applied finish coating (see FDOT Standards), unless otherwise approved by the Highway Construction and Engineering Division.

Areas used by motor vehicles, bicycles or pedestrians shall have non-skid surfaces.

*8-2.8 Utility Conduits in Sidewalks:* All bridges shall be designed with a minimum of four (4) - six (6) inch PVC conduits in each sidewalk to provide the maximum capacity for crossings of electrical power, telecommunications, and /or gas utilities. These conduits are the preferred locations for crossings of the above utilities. Where these facilities are available and suitable, no external mounting shall be allowed on any County bridge.

*8-2.9 Maintenance of Traffic:* Where an existing bridge is being modified or replaced by a new structure, pedestrian and vehicular traffic and access to mass transit facilities shall be maintained during periods of "phased" construction.

# CHAPTER 9 – WATER DISTRIBUTION AND SEWAGE COLLECTION SYSTEMS - GENERAL REQUIREMENTS

## 9-1 PERMITS

*9-1.1 Issuance:* Permits for construction or maintenance of water distribution and sewage collection systems or the additions thereto, shall be issued only after the following requirements have been completed:

*9-1.1.1 Subdivision Plats:* A subdivision plat for the area of the proposed construction has been recorded in the public records of Broward County. This requirement shall not apply to the installation of lines in or through areas already platted or within dedicated public right-of-way, or within easements or public right-of-way extending across undeveloped areas.

*9-1.1.2 Water and Sewer Plan Approval:* Water and sewer plans have been submitted to and approved by the Highway Construction and Engineering Division. For projects involving paving and/or drainage work as well, water, sewer, paving and drainage plans shall be submitted concurrently.

*9-1.1.3 Project Plans and Technical Specifications Approval:* Project plans, if any, and technical specifications have been approved by the Highway Construction and Engineering Division.

*9-1.1.4 Provisions of Chapter 4:* The provisions of Chapter 4, Section 4-1 of this document have been met.

## 9-2 FEES AND SECURITY

*9-2.1 Calculation of Security Amounts and Fees:* The separate security amounts and fees are to be computed in accordance with the provisions of Chapter 4, Section 4-3.

*9-2.2 Re-inspection and Retesting Fees:* The provisions of Chapter 4, Section 4-3.3 shall apply.

## 9-3 PLANS AND SPECIFICATIONS

*9-3.1 Plan Submittal Requirements:* Three (3) sets of plans, approved by the operating utility, which have been signed and sealed by a P.E. licensed in the State of Florida, shall be submitted to the Highway Construction and Engineering Division for review and approval on projects for which Paving and Drainage review is not required. On projects for which Paving and Drainage review is required, seven (7) sets of plans, signed, sealed and approved by the operating utility, shall be submitted concurrently with the Paving and Drainage drawing submittal.

*9-3.2 Benchmarks:* Accessible Benchmarks shall be listed on all plans, using the National Geodetic Vertical Datum (NGVD).

*9-3.3 Sheet Size:* All plans shall be submitted on white paper with blue or black lines. All plans shall be submitted on 24" x 36" sheets. Small projects may be submitted on legal size paper, provided that scale requirements are met and only one (1) sheet is required.

*9-3.4 Utilities:* All plans shall show all existing adjacent utilities as well as all other known planned utilities sufficiently to permit judging of the compatibility of the proposed work with the existing and planned systems. All existing utilities that have been abandoned, but are still in the ground, shall be shown on the plans and labeled as "abandoned."

*9-3.5 Plan Layout:* All general area layout plans shall be prepared at a scale of three hundred (300) feet or less to the inch. Detailed plans for arterial roads and collector roads shall be prepared at a scale of twenty (20) feet or less to the inch. Detailed plans for local subdivision roads shall be prepared at a scale of forty (40) feet or less to the inch. Sewer profiles shall be the same horizontal scale as the plans. All elevations shall be based on the National Geodetic Vertical Datum (NGVD).

*9-3.6 Abutting Subdivisions:* The names and boundaries of all abutting subdivisions shall be shown, giving the plat book and page number of the recordation of each.

*9-3.7 Non-platted Areas:* Areas not platted shall be shown as acreage, and the Section, Township and Range shall be noted.

*9-3.8 Right-of-Way Dimensions:* Dimensions of public right-of-way shall be indicated.

*9-3.9 Legends:* All plans shall show suitable legends.

*9-3.10 Detailed Plans:* The detailed plans shall show water and/or sewer main materials, sizes, and their dimensioned locations. They shall also show the locations of valves, hydrants, maintenance access structures, tees, wyes and approximate locations of house connections.

*9-3.11 Pavements:* Existing and proposed pavements shall be clearly indicated on the drawings and shall be dimensionally located within public right-of-way. Proposed cuts in pavement shall be shown and noted.

*9-3.12 Street Identification:* All streets shall be identified.

*9-3.13 Existing Utility Locations:* When locations of existing utilities cannot be determined, this shall be so noted.

*9-3.14 Bus Stops and Related Facilities:* Locations of bus stops and related facilities shall be shown.

*9-3.15 Service Laterals:* Service laterals which are to be installed during the original installation of main(s) shall be indicated, but need not have dimensioned locations on original plans. Plans for services to be installed as a separate project, after installation of main(s), shall be noted and explained.

*9-3.16 Specifications:* Specifications for the proposed work shall be submitted with the plans. A notation shall be made on the plans that all installations shall be in conformity with the "Minimum Standards." Specifications may be omitted in connection with plans for minor extensions of existing systems provided that the extensions are to be constructed in accordance with the requirements of these Minimum Standards.

*9-3.17 Identity of Utility Companies:* The identity of the operating or maintaining utility companies shall be indicated on the plans.

**9-4 THRUST BLOCKS:** The use of concrete thrust blocks is prohibited within public right-of-way, unless an approved form of mechanical restraint cannot be utilized.

# CHAPTER 10 – WATER DISTRIBUTION SYSTEMS - TECHNICAL REQUIREMENTS

**10-1 STANDARDS:** All water distribution systems constructed in public right-of-way shall meet or exceed the provisions of this document and the following standards, specifications and regulations. All installations shall be in accordance with the manufacturer's recommendations except where these Standards are more stringent.

- Broward County Public Health Department (BCPHD)
- Florida Department of Health
- Florida Department of Environmental Protection
- Broward County Environmental Protection Department
- Recommended Standards for Water Works
- Broward County Fire Protection Division
- Building and Zoning and other agencies as applicable
- American Water Works Association Standards (AWWA)
- FDOT "Utility Accommodation Manual"
- American National Standards Institute (ANSI)
- American Society for Testing Materials (ASTM)
- Broward County Water and Wastewater Operations Division (WWOD) "Minimum Design and Construction Standards"

**10-2 MATERIALS:** All pipe, pipe fittings and specials intended for water distribution or transmission systems shall be designed for a minimum working pressure of one-hundred-fifty (150) p.s.i., and shall be NSF 61 compliant.

*10-2.1 Pipe:* All main piping shall be of ductile iron or reinforced concrete or PVC unless otherwise approved.

Flow characteristics shall govern the sizes of mains to be used except that the minimum size to be used shall be eight (8) inches unless otherwise approved. In certain cases, a six (6) inch main and/or short runs to hydrants shall be acceptable.

*10-2.1.1 Ductile Iron Pipe:* Ductile iron pipe shall conform to AWWA/ANSI Standard C151/A21.51 "Ductile Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds" and C150/A21.50, "Thickness Design of Ductile Iron Pipe." For new systems or new extension to existing systems, ductile iron pipe shall conform with pressure classification 350 for sizes six (6) inches through twenty-four (24) inches, and pressure classification 250 for sizes over twenty-four (24) inches.

Ductile iron pipe shall be cement-lined and seal-coated in accordance with AWWA/ANSI Standard C-104/A 21.4, or with Highway Construction and Engineering Division approval, shall be poly-lined or coated with the manufacturer's epoxy coating systems.

All ductile iron pipes shall have restrained joints.

*10-2.1.2 Reinforced Concrete Pressure Pipe:* The use of reinforced concrete pressure pipe shall be limited to sizes twenty-four (24) inches and over. It shall be of the steel cylinder type, shall be prestressed and shall conform to AWWA Standard C-301 unless otherwise approved. All concrete for these pipes shall be made with Type II cement, exclusively.

*10-2.1.3 Asbestos-cement Pipe:* Asbestos-cement pipe shall not be permitted on new construction. Repairs to existing asbestos cement pipe shall be subject to Highway Construction and Engineering Division approval as to methods and materials used.

Where roads are to be built, widened or rebuilt, existing asbestos cement pipe under the area to be paved shall be deactivated and removed. If removal and disposal are not practical, the alternative method of flushing and filling the pipe with grout may be used, if approved by the Highway Construction and Engineering Division.

*10-2.1.4 Air Release Valve Piping*: Piping to and from air release valves shall be Schedule 40 stainless steel or Schedule 80 PVC, with threaded joints.

*10-2.1.5 Service Laterals:* Service laterals from one (1) inch through two (2) inches inclusive shall be of copper tubing (flare or compression connection),

Services over two (2) inches shall conform to the provisions of this Chapter as applicable, unless otherwise approved.

*10-2.1.5.1* Copper tubing shall be Type “K” and shall conform to ANSI/AWWA Standard 75CR. Fittings shall comply with ANSI/AWWA Standard C-800.

*10-2.1.5.2* Plastic pipe for service laterals shall be polyethylene SDR-9 CTS-OD or polybutylene tubing only and shall meet the following requirements:

Polyethylene tubing shall be extruded from PE34068 high molecular weight materials, as per ANSI/AWWA Standard C-901 and shall conform to ASTM Specification D-2737.

Polybutylene tubing shall be extruded from PE2110, Type 2, Grade 1, Class B or C material as per ANSI/AWWA Standard C-902 and shall conform to ASTM Specification D-2581.

*10-2.2 Fittings*

*10-2.2.1 Ductile Iron Fittings:* Ductile iron fittings shall conform with ANSI/AWWA Standard C-110/A21.10. Fittings six (6) inches and larger shall be lined as provided in Section 10-2.1.1.

*10-2.2.2 Pre-stressed Concrete Pressure Pipe Fittings:* Fittings for pre-stressed concrete pressure pipe shall conform to AWWA Standard C-301.

*10-2.3 Joints*

*10-2.3.1 Joints for Ductile Iron Pipe:* Joints for bell and spigot ductile iron pipe and fittings shall conform to ANSI/AWWA Standard C-111/A21.11. Mechanical joint or push-on joint to be rubber gasket compression-type. Special fittings and joints shall be considered for specific installations subject to the approval of the Highway Construction and Engineering Division.

*10-2.3.2 Joints for Reinforced Concrete Pipe:* Joints for reinforced concrete pipe shall be of rubber gasket compression type conforming to AWWA STANDARD C-301.

*10-2.3.3 Solvent Weld or Threaded Joints:* No solvent weld or threaded joints shall be permitted, except for air release valve piping.

*10-2.3.4 Mechanical Restraints:* Mechanical restraints shall be provided on all mains in lieu of thrust blocks at all tees, hydrants and changes of direction, unless it is demonstrated that such restraint cannot reasonably be accomplished or would be undesirable.

*10-2.4 Valves*

*10-2.4.1 Gate Valves Six (6) Inches and Larger:* Metal-seated gate valves six (6) inches and larger shall comply with AWWA Standard C-500 and shall have the following features:

*10-2.4.1.1* All gate valves are to be bronze mounted, double-disc, parallel seat type, opening Left (counter-clockwise). Non-geared valves shall be furnished with "O" ring packing (two (2) "O" rings). The operating mechanism shall be for buried service, with a two (2) inch square operating nut.

*10-2.4.1.2* Valves sixteen (16) inches and larger shall be furnished with beveled gearing and by-pass valve. Beveled gear valves shall have rollers, tracks and scrapers.

*10-2.4.1.3* Gate valves six (6) inches through twelve (12) inches shall have a minimum designed working pressure of two-hundred (200) p.s.i. and shall be tested at four-hundred (400) p.s.i. Gate valves sixteen (16) inches through forty-eight (48) inches shall have a minimum designed working pressure of one-hundred-fifty (150) p.s.i. and shall be tested at three-hundred (300) p.s.i.

*10-2.4.2 Gate Valves Under Six (6) Inches:* Gate valves under six (6) inches in size shall be bronze with a minimum working pressure of one-hundred-fifty (150) p.s.i. and shall conform to MSS standard practice SP-37 unless otherwise directed by the Highway Construction and Engineering Division. Pewter and pot-metal operating wheels shall not be permitted.

*10-2.4.3 Butterfly Valves:* Butterfly valves shall be designed and manufactured in accordance with ANSI/AWWA Standard C-504 for Rubber Seated Valves Class 150B.

*10-2.4.4 Resilient Seat Valves Six (6) Inches and Larger:* Resilient Seat Valves shall comply with AWWA Standard C-509 and shall have a minimum working pressure of two-hundred (200) p.s.i.

*10-2.4.5 Ball Valves:* Ball valves shall conform to ANSI/AWWA Standard C-507 for one-hundred-fifty (150) p.s.i. pressure class. The valve body shall be cast iron or ductile iron.

*10-2.4.6* Check Valves: Check valves four (4) inches and larger shall comply with AWWA Standard C-508, or shall be resilient seated, flexible, rubber coated disc type.

*10-2.4.6.1* Check valves four (4) inches through twelve (12) inches shall have minimum working pressure of one-hundred-seventy-five (175) p.s.i.

*10-2.4.6.2* Check valves fourteen (14) inches through twenty-four (24) inches shall have minimum working pressure of one-hundred-fifty (150) p.s.i.

*10-2.4.7 Plug Valves:* Plug Valves shall not be used on water mains.

*10-2.4.8 Tapping Sleeves and Valves:* Tapping sleeves shall conform to MSS Standard SP-60. All gaskets shall be neoprene, "O"-ring type. Gasket restraint provisions shall be incorporated into the body of the sleeve. A test plug shall be provided at the outlet throat.

*10-2.4.8.1* Tapping gate valves six (6) inches through twelve (12) inches shall comply with ANSI/AWWA Standard C-500, or C-509. The valve port shall be free and full to allow unobstructed passage of the portion of the pipe wall cut out during the tap.

*10-2.4.8.2* Valves sixteen (16) inches and larger shall be furnished with a by-pass valve.

*10-2.4.8.3* Gate valves six (6) inches through twelve (12) inches shall have a minimum working pressure of two-hundred (200) p.s.i., and be tested at four-hundred (400) p.s.i. Valves sixteen (16) inches through forty-eight (48) inches shall have a minimum working pressure of one-hundred-fifty (150) p.s.i. and be tested at three-hundred (300) p.s.i.

*10-2.4.9 Valve Boxes:* Valve boxes shall be cast iron extension type with not less than a five-and-one-quarter (5-1/4) inch diameter shaft, and with locking covers marked as appropriate. Covers shall be Tyler Pipe Series 6850, or as otherwise approved.

*10-2.4.9.1* All valve boxes shall be located in public right-of-way or a public utility easement.

*10-2.4.9.2* All valve boxes in paved areas, except those in concrete sidewalks, shall have a twenty-four (24) inch x twenty-four (24) inch x eight (8) inch thick concrete collar set three (3) inches below the surrounding finished grade.

*10-2.5 Fire Hydrants*

*10-2.5.1 Standards:* All fire hydrants shall comply with AWWA Standard C-502 and shall be of uniform make and model within any one (1) permitted project.

*10-2.5.2 Specifications:* Fire hydrants shall be of the compression type, opening against the pressure and closing with the line pressure with a five and one-quarter (5-1/4) inch minimum valve opening. Hydrant drains shall not be permitted.

*10-2.5.3 Spacing and Flow Requirements:* Fire hydrant spacing and flow requirements shall conform to the latest requirements of the Broward County Fire Marshall standards, plus the requirements of any local fire department having jurisdiction.

*10-2.6 Air Release Valves*

*10-2.6.1 Type:* Air release valves shall be of a type having a special float enclosed in the valve body with attached lever for opening and closing the air discharge port. Access to the ball float and interior discharge vent seat shall be provided by means of a bolted flange. Valves shall be as made by Val Matic or approved equal.

*10-2.6.2 Design of the Float and Lever:* The design of the float and level shall be such as to ensure opening of valve port under one-hundred-fifty (150) p.s.i. working pressure. The assembly shall not leak, nor shall the valve stick under service conditions.

*10-2.7 Fire Wells:* Fire wells shall be as specified by the Broward County Fire Protection Division, or by the Municipal Fire Department having jurisdiction, and shall be of breakaway design if located in a clear zone.

*10-2.8 Service Saddles:* Service saddles shall be ductile iron or bronze conforming to ASTM Standard A-536, with double straps (stainless steel in corrosive environment) which tighten to conform to the pipe and shall have an O-ring gasket seal around the tap, set in a retaining groove, to provide a watertight seal under pressure.

**10-3 INSTALLATION:** The installation and testing of all new water mains shall be in accordance with ANSI/AWWA Standard C-600 and the provisions of this document.

*10-3.1 Location*

*10-3.1.1 Water Mains:* Water mains shall be installed in public right-of-way or utility easements ONLY, and shall be installed in accordance with Drawings 1 through 4 in Appendix A, unless changed by reason of interference with existing utilities, the platting of half-streets, or other valid cause. The separation, encasement and other factors concerning the placing of water and sanitary sewer facilities in the same public right-of-way, shall be addressed in accordance with the applicable Standards of all agencies having jurisdiction.

*10-3.1.2 Valves:* All valves for water mains shall be located next to the tee or cross at intersecting streets, except where the use of a valve is required at a location not in a street intersection. The stems of all buried valves shall be not less than four (4) inches, or more than twelve (12) inches, below the finished grade unless otherwise approved. Valve stem extensions shall be used to bring the operating nut within twelve (12) inches of finished grade.

*10-3.1.3 Meter Boxes:* Boxes for meters up to two (2) inches in size may be located in public right-of-way near the property line. Boxes so located shall be of a traffic bearing type unless otherwise approved, and shall be set flush with the surrounding surface.

Boxes for meters over two (2) inches in size shall require Highway Construction and Engineering Division approval for locations within public right-of-way.

*10-3.1.4 Taps (Main to Main):* The maximum and minimum tap sizes for water mains, unless otherwise authorized by the Highway Construction and Engineering Division, shall be as follows:

| Pipe Size | Minimum Tap Size | Maximum Tap Size |
|---|---|---|
| 8” | 6” | same size as main |
| 10” through 16” | 6” | same size as main |
| 18” through 20” | 12” | same size as main |
| 36” | 20” | same size as main |
| 42” and larger | 20” | same size as main |

Notes: Same size taps are not allowed on asbestos cement pipe. Tapping values four (4) inches to six (6) inches shall comply with AWWA Standard C-509, latest revision.

*10-3.1.5 Service Laterals*

*10-3.1.5.1* All service laterals which shall be located under pavement shall be installed or stubbed out from under the pavement during installation of the main or shall be driven under the existing pavement at a later date.

*10-3.1.5.2* Service laterals requiring open cuts into existing pavement after installation of the main shall require separate permits and security, and shall be avoided if possible.

*10-3.1.6 Fire Hydrants*

*10-3.1.6.1* The location and installation of fire hydrants shall be in accordance with Fire Protection Division standards or the requirements of the local Fire Department having jurisdiction. Hydrant guards shall not be installed within the “clear zone” of any County road.

*10-3.1.6.2* Fire hydrants shall be painted with reflective type paint in accordance with NFPA Standard #291 or per the latest requirements of the Broward County Fire Marshall or any local fire department having jurisdiction.

*10-3.1.6.3* A blue raised reflective pavement marker shall be used to identify the fire hydrant location. The placement of the reflector to be at the center line of the outside roadway lane, unless otherwise directed by the Fire Marshall or the local fire department having jurisdiction.

*10-3.1.7 Valve Boxes:* All valve boxes installed in landscaped or grassed areas shall have a twenty-four (24) inch x twenty-four (24) inch x eight (8) inch thick poured concrete support collar set even with the surrounding finished surface.

*10-3.1.8 Air Release Valves:* Air release valves shall be installed at high points in the line as shown on approved plans or as designated by the Engineer of Record, to purge air and other gases from the line while under pressure.

*10-3.2 Cover*

*10-3.2.1 Mains:* The minimum cover on all water mains shall be thirty-six (36) inches (thirty (30) inches for DIP). The top of the operating nut shall have a minimum cover of thirty (30) inches to allow for stabilization of road subgrade. A greater cover may be necessary to insure that the operating nuts of valves shall have clearance below the bottom of the valve box cover. The elevations of sanitary sewer house connections shall be considered in determining water main cover.

*10-3.2.2 Service Laterals:* Service laterals under present or future pavements shall have a minimum cover of thirty (30) inches. If cover is less than thirty-six (36) inches, an approved casing shall be used.

*10-3.3 Construction Procedures and Installation of Facilities:* Construction procedures, restorations and installations shall be in accordance with the provisions of Chapter 3 of this document. Pipe detection material, if used, shall meet the requirements of Chapter 3, Section 3-4.6 and shall be placed directly over and one (1) foot above the crown of the pipe.

## 10-4 TESTING OF INSTALLATIONS

*10-4.1 Standards:* Water mains shall be tested in accordance with ANSI/AWWA Standard C-600 with a minimum test pressure of one-hundred-fifty (150) p.s.i. A gauge supplied by the operating utility or the Highway Construction and Engineering Division shall be used on all testing.

*10-4.2 Representation:* The Highway Construction and Engineering Division, the Operating Utility, and the Engineer of Record shall all be represented at all tests of water lines in public right-of-way and/or public easements. The Engineer of Record shall certify all test results to the Highway Construction and Engineering Division. A representative of the Highway Construction and Engineering Division shall witness the conduct of the test and the results thereof, and shall indicate concurrence by countersigning the test report at the conclusion of the test. In the event that the Highway Construction and Engineering Division fails to witness a properly scheduled test, the certification of the Engineer of Record shall be accepted.

## 10-5 DISINFECTION

*10-5.1 Standards:* Water mains shall be disinfected in accordance with ANSI/AWWA Standard C-651.

*10-5.2 Hydrostatic and Bacteriological Testing:* Mains shall not be placed into domestic service until after satisfactory hydrostatic and necessary bacteriological testing has been completed, and clearance granted by the Broward County Public Health Department and all other applicable agencies.

## 10-6 CERTIFICATIONS AND RECORD DRAWINGS

*10-6.1 Certification:* The Engineer of Record on each project shall be responsible for observation of construction and shall inspect same for conformity to the approved plans and specification. Upon completion of the project, the Engineer of Record shall furnish the required project documents, signed and sealed, to the Highway Construction and Engineering Division, the Broward County Public Health Department and to any other agencies so requiring, certifying that construction of the project has been carried out in substantial conformance with the approved plans and specifications.

*10-6.2 Record Drawings:* Prior to final inspection, the Engineer of Record shall furnish one (1) set of certified record drawings signed and sealed by both the Engineer of Record and a Professional Surveyor and Mapper, to the Highway Construction and Engineering Division at no charge. In every case, when the design drawings have been produced using a CAD system, the “as-built” or record drawings shall also be produced on the CAD and the Engineer of Record shall also submit a copy of the magnetic medium containing the information from which the as-built drawings were produced.

*10-6.3 House Connections:* Accurate house connection dimensions shall be shown on the plans. Main and terminal point locations, elevations of stubs or laterals, and locations and elevations of all changes in direction and slope shall also be shown.

*10-6.4 Drawing Submittals:* The drawings submitted under the preceding paragraph shall bear the certification of the Engineer of Record that the installation conforms substantially to the design, has passed all required tests, and that the inspection of the installation during construction was conducted under the supervision of a representative of, or the Engineer of Record. All required reports and certifications must be received by the Highway Construction and Engineering Division prior to final inspection.

*10-6.5 Underground Utilities Encountered During Construction:* In addition to the above requirements, record drawings shall indicate the size, material, location and elevation of all underground utilities encountered during construction.

*10-6.6 Professional Surveyor and Mapper (PSM) Certification:* All locative information and dimensions shall be certified by a Professional Surveyor and Mapper registered in the State of Florida.

**10-7 SERVICE CONNECTIONS:** Service connections shall not be made until the entire installation has been tested and accepted by the operating utility, the Highway Construction and Engineering Division, the Broward County Public Health Department, and all other agencies having jurisdiction.

**10-8 ABANDONED FACILITIES:** The provisions of Chapter 3, Section 3-4.3 of this document shall apply.

**10-9 CONFLICT STRUCTURES:** Conflict maintenance access structures shall be approved on an individual basis by the appropriate regulatory and maintaining agencies and by the Highway Construction and Engineering Division. In no case may a water line pass through or come in contact with a sanitary sewer maintenance access structure. This shall include field changes as well as initial design.

Conflict maintenance access structures shall conform to the requirements of Chapter 10, Section 10-9 and Drawing 21 in Appendix A.

# CHAPTER 11 – SEWAGE COLLECTION SYSTEMS - TECHNICAL REQUIREMENTS

**11-1 STANDARDS:** All sewage collection systems in public right-of-way shall be in accordance with the following Standards, specifications and regulations, except as modified by these Standards. All installations shall be in accordance with the Manufacturer's recommendations, except where these standards are more stringent.

- Broward County Public Health Department (BCPHD)
- Florida Department of Health
- Florida Department of Environmental Protection
- Broward County Environmental Protection Department
- Broward County Building and Zoning, and other agencies (as applicable)
- American Water Works Association (AWWA)
- FDOT "Utility Accommodation Manual"
- American National Standards Institute (ANSI)
- American Society for Testing Materials (ASTM)
- Recommended Standards for Wastewater Facilities
- Broward County Water and Wastewater Operations Division (WWOD) "Minimum Design and Construction Standards"

**11-2 MATERIALS:** All pressure pipe, pipe fittings and specials intended for sewage collection or transmission mains shall be designed for a minimum working pressure of one-hundred-fifty (150) p.s.i.

*11-2.1 Pipe:* All main piping shall be ductile iron or PVC. Flow characteristics shall govern the sizes of pipe, except that the minimum size to be used shall be eight (8) inches.

*11-2.1.1 Ductile Iron Pipe:* Ductile iron pipe shall conform to ANSI/AWWA Standard C-151/A21.51 "Ductile Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds" and C-150/A21.50, "Thickness Design of Ductile Iron Pipe." For new systems or extensions to existing systems, Ductile Iron Pipe shall conform with pressure classification 350 for sizes six (6) inches through twenty-four (24) inches, and pressure classification 250 for sizes above twenty-four (24) inches.

Ductile iron pipe shall be poly-lined or, with Highway Construction and Engineering Division approval, coated with the manufacturer's coating system. The pipe shall be adapted for use with Class 350 fittings through twenty-four (24) inches, and with Class 250 fittings for sizes over twenty-four (24) inches.

*11-2.1.2 PVC Pipe:* PVC non-pressure pipe shall conform to ASTM D-3034 (SDR 26).

*11-2.1.3 Asbestos Cement / Vitrified Clay Pipe:* Use of asbestos cement or vitrified clay pipe shall not be permitted on new construction. Repairs to existing pipes of this material shall be subject to approval by the Highway Construction and Engineering Division.

Where roads are to be built, widened or rebuilt, existing asbestos cement pipe under areas to be paved shall be de-activated and removed. If removal and disposal is not practical, the alternative method of flushing and filling the pipe with grout may be used, if approved by the Highway Construction and Engineering Division.

*11-2.2 Fittings*

*11-2.2.1 Ductile Iron Fittings:* The provisions of Chapter 10, Section 10-2.2.1 shall apply.

*11-2.2.2 PVC Fittings:* PVC fittings shall be of monolithic or factory fabricated (solvent weld) construction in accordance with ASTM D-3034 and of the type specified by the manufacturer of the pipe being used. No non-factory solvent welds or threaded joints shall be permitted. SDR 26 fittings shall be used.

*11-2.3 Joints*

*11-2.3.1 Ductile Iron Pipe Joints:* Joints for bell and spigot ductile iron pipe and fittings shall conform to ANSI/AWWA Standard C-111/A21.11. Mechanical joints or push-on joints to be rubber gasket compression-type. Special fittings and joints shall be considered for specific installations subject to the approval of the Engineer of Record.

*11-2.3.2 PVC Pipe Joints:* Joints for PVC non-pressure pipe shall be bell and spigot push-on rubber gasket type only. No solvent weld or threaded joints shall be permitted.

*11-2.3.3 Pipe Certification:* The pipe manufacturer shall furnish evidence in the form of affidavits, certified laboratory reports and other data as may be required that the material being used in the manufacture of the seal or gasket is in strict accordance with the material supplier's recommendations.

*11-2.3.4 Jointing of Pipe on the Job:* The jointing of the pipe on the job shall be done in strict accordance with the pipe manufacturer's instructions and shall be done entirely in the trench unless otherwise directed by the Engineer of Record.

*11-2.4 Maintenance Access Structures*

*11-2.4.1 Precast Concrete Maintenance Access Structures:* Precast reinforced concrete maintenance access structures shall conform to the requirements of ASTM C-478 and the following modifications thereto:

*11-2.4.1.1* Minimum wall thickness shall be eight (8) inches.

*11-2.4.1.2* Minimum inside diameter of base sections shall be four (4) feet.

*11-2.4.1.3* The pre-cast reinforced base shall be a minimum of eight (8) inches thick and be cast monolithically with the bottom section of the walls.

*11-2.4.1.4* The minimum height of base sections shall be three (3) feet from the bottom of base slab except that under special conditions, the height may be decreased to eighteen (18) inches, contingent upon prior approval of the Highway Construction and Engineering Division.

*11-2.4.1.5* Brick for maintenance access structure chimney construction shall be dense, hard burned, common clay brick conforming to ASTM C-62 latest revision, except that brick absorption shall be between five (5) and twenty-five (25) grams of water absorbed in one (1) minute by dried brick, set flat face down, in one-eight (1/8) inch of water. All brick shall be thoroughly wet before laying up and shall be laid with a shove joint in full mortar beds and shall be thoroughly slushed up with mortar at every course. Brick shall be a minimum of two (2) courses and a maximum of four (4) courses.

Concrete adjustment rings, two (2) rings minimum and four (4) rings maximum, shall be considered as an alternative to brick and mortar with approval of the Highway Construction and Engineering Division.

*11-2.4.1.6* The lid and frame shall be cast of close ground grey iron conforming to ASTM A48 and shall be of uniform quality, free of blow holes, porosity, cracks and other obvious visual defects. The combined weight of the frame and lid shall not be less than 525 pounds, and the lid shall weigh a minimum of 160 pounds. The seating surfaces between frames and covers shall be machined to fit true. No plugging or filling shall be allowed. Casting patterns shall conform to those designated by the operating utility and shall have the words “sanitary sewer” cast in all maintenance access structure covers.

*11-2.4.1.7* When a maintenance access structure is in low lying areas or when in the opinion of the Highway Construction and Engineering Division, an unusual condition exists, a sealed locking type lid may be required. Installations of this type shall be carried out as approved by the Highway Construction and Engineering Division.

*11-2.4.1.8* All concrete used in maintenance access structure construction shall have Type 2 cement exclusively.

*11-2.4.2 Brick Maintenance Access Structures:* Brick maintenance access structures are not permitted.

*11-2.5 Service Laterals:* All service laterals shall be ductile iron or PVC meeting the requirements of Section 11-2.1 of this Chapter.

**11-3 INSTALLATION**: The jointing of the pipe on the job shall be done in strict accordance with the pipe manufacturer's instructions and shall be done entirely in the trench unless otherwise directed by the Engineer of Record.

All sewer installations shall be in accordance with the provisions of this Chapter and Chapter 3 of this document.

*11-3.1 Mains*

*11-3.1.1 Location:* Gravity sewer mains shall be installed at the centerline of the right-of-way unless otherwise approved by the Highway Construction and Engineering Division.

*11-3.1.2 Alignment:* Gravity sewer mains, as installed, shall meet the alignment requirements of ASTM Standard C-12 and those of the Environmental Planning Department.

*11-3.1.3 Cover:* The minimum cover on all sanitary sewer mains shall be thirty (30) inches for ductile iron pipe and thirty-six (36) inches for PVC pipe. The slope and depth of house connections shall be considered in determining sewer main cover.

*11-3.1.4 Termination Points:* All main runs shall begin and end at maintenance access structures.

*11-3.2 Service Laterals*

*11-3.2.1 Location:* Service laterals shall be installed along the lot line extension of each platted lot, whenever possible, at the time of main installation, and shall be terminated at the property line or as close thereto as is practical for each residence or business location.

*11-3.2.2 Clean-outs:* Each service lateral shall include an approved clean-out section at the property line and shall terminate with a capped wye fitting for future house connections.

*11-3.2.3 Minimum Size:* The minimum size for any service lateral shall be six (6) inches and the minimum depth at the right-of-way line shall be thirty-six (36) inches, unless otherwise approved by the Highway Construction and Engineering Division.

The minimum depth for ductile iron service laterals at the right-of-way line shall be thirty (30) inches, unless otherwise approved by the Highway Construction and Engineering Division.

*11-3.2.4 Pavement Cuts:* Service laterals requiring cuts into the pavement after installation of the main and paving of the roadway, shall require separate permits, permit fees and security, and are to be avoided, if possible.

*11-3.2.5 Stubs:* Service laterals may not be stubbed into maintenance access structures.

*11-3.2.6 Detection Markers:* Locations of all non-metallic lines shall be permanently marked with electro magnetic detection markers or other approved means at all service lateral taps, wyes and house connections.

*11-3.3 Maintenance Access Structures*

*11-3.3.1 Pre-cast Sections:* All precast maintenance access structure sections, as delivered to the job-site, shall be un-patched and shall bear the stamp of a certified Engineering Testing Laboratory, signed and dated, certifying that the sections meet the requirements of ASTM Standard C-478, and of this document for concrete strength, steel reinforcement area and placement, and appearance when manufactured. All maintenance access structure sections shall be subject to inspection at the job-site by the Highway Construction and Engineering Division Inspector to verify conformity with requirements of ASTM C-478 and this document.

*11-3.3.2 Adapter Couplings:* Approved flexible adapter couplings are required for connecting pipe to maintenance access structures.

*11-3.3.3 Lifting Holes and Rings:* Lifting holes through the structures shall not be permitted. Lift rings shall meet the OSHA requirements, and be removed from structure sections immediately upon installation.

*11-3.3.4 Joining of Sections:* Maintenance access structure sections shall be joined with a mastic compound or a round compression ring of neoprene material set in annular spaces cast into the spigot end of a bell and spigot type joint. The mastic compound or ring shall be uniformly compressed between the positioned sections so as to form a watertight joint. After the sections are assembled, the remaining space in the joint shall be pointed up and filled with dense cement mortar and finished so as to make a smooth, continuous surface inside and outside the wall sections.

*11-3.3.5 Deep Structures:* Deep structures may have an eight (8) inch precast reinforced concrete slab on the top in lieu of the cone sections. Slabs shall have a twenty-four (24) inch minimum diameter access hole centered in the slab, or located as directed by the Highway Construction and Engineering Division. Slabs, if used, shall terminate at such elevations as shall permit laying up a minimum of two (2) courses of clay brick, a maximum of four (4) courses of brick under the structure's frame to make allowance for future street grade adjustments and/or settlement.

Concrete adjustment rings, two (2) rings minimum and four (4) rings maximum, shall be considered as an alternative to brick and mortar with approval of the Highway Construction and Engineering Division.

*11-3.3.6 Precast Cones:* Precast cones, if used, shall terminate at such elevations as shall permit laying up a minimum of two (2) courses and maximum of four (4) courses of clay brick under the structure's frame to make allowance for future street adjustment and/or settlement.

Concrete adjustment rings, two (2) rings minimum and four (4) rings maximum, shall be considered as an alternative to brick and mortar with approval of the Highway Construction and Engineering Division.

*11-3.3.7 Invert Channels:* The invert channels shall be of solid cement mortar and shall be smooth and accurately finished to a semicircular shape conforming to the

inside of the adjacent sewer pipe section. Steep slopes outside the invert channels shall be avoided. Changes in the size and grade shall be made gradually and evenly. Changes in the direction of the shaped sewer inverts within the structure shall be a smooth curve with a radius as long as practicable.

*11-3.3.8 Drop Connections:* Drop connections shall be required when the vertical distance between inlet and outlet inverts exceeds two (2) feet. Outside drops are preferred, but inside drops shall be allowed, if approved by the utility. Outside drop connection bases shall be cast monolithically with the structure's base. All drop connections shall meet the requirements of the "Recommended Standards for Wastewater Facilities."

*11-3.3.9 Steps or Ladders:* Steps or ladders shall be omitted unless specifically requested by the Engineer of Record.

*11-3.3.10 Stub-outs:* Where shown on the drawings, the permittee shall place stub-outs for future extensions. Such stub-outs shall be closed with plugs as specified by the Engineer of Record.

*11-3.3.11 Protective Coating:* Two (2) coats (a minimum thickness of six (6) mils of approved protective material) shall be applied to the entire outside and inside surface of the structure at the job-site, after inspection. This material shall be applied in accordance with the manufacturer's specifications. The coats shall have contrasting colors so as to be easily verified. The outside of the structure shall be coated prior to being placed in the ground, and the inside shall be coated after final inspection.

*11-3.3.12 Protective Liners:* If required by the Highway Construction and Engineering Division protective liners shall be installed inside the structure in lieu of interior protective coating.

## 11-4 TESTING OF FACILITIES

*11-4.1 Representation:* The Highway Construction and Engineering Division, the operating utility, and the Engineer of Record shall all be represented at all tests of sewer lines in public right-of-way, and/or public easements.

The Engineer of Record shall certify all test results to the County. The Highway Construction and Engineering Division representative shall indicate concurrence with the test results by countersigning the test report at the conclusion of the test. In the event that the Highway Construction and Engineering Division determine that it does not need to be present for the test, the certification of the Engineer of Record shall be accepted.

*11-4.2 Infiltration – Exfiltration Tests*

*11-4.2.1 Allowable Limits:* The allowable limits of infiltration or exfiltration for the entire system, or any portion thereof, shall not exceed a rate of 100 gallons per inch of inside pipe diameter per mile of pipe per twenty-four (24) hours. No additional allowance shall be made for house service lines. The allowable limits of infiltration or exfiltration at maintenance access structures shall not exceed a rate

of four (4) gallons per structure per twenty-four (24) hours. No leakage allowance shall be made for service laterals on infiltration or exfiltration tests.

*11-4.2.2 Testing Requirements:* The entire system shall be tested for infiltration or exfiltration, except as directed by the Highway Construction and Engineering Division. Prior to testing for infiltration, the system shall be filled and then pumped out so that normal infiltration conditions exist at the time of testing.

*11-4.2.3 Determination of Infiltration or Exfiltration Amounts:* The amounts of infiltration or exfiltration shall be determined by the use of weirs or by pumping into or out of calibrated containers.

*11-4.2.4 Testing Method:* The exfiltration test shall be conducted by filling the portion of the system being tested with water to a level equal to the lowest part of the lowest structure's frame. Air testing shall be considered as an alternative test method with approval by the Highway Construction and Engineering Division.

*11-4.2.5 Testing Length:* Tests shall be conducted on portions of the system not to exceed three (3) maintenance access structure sections or twelve-hundred (1200) feet, whichever is greater, unless otherwise directed by the Highway Construction and Engineering Division. Tests shall be run continuously for two (2) hours.

*11-4.2.6 Defective Construction:* Where infiltration or exfiltration exceeds the allowable limits specified herein, the defective pipe, joints or other faulty construction shall be located and repaired by the permittee. If the defective portions cannot be located, the permittee shall remove and reconstruct as much of the system as is necessary in order to conform to the specified allowable limits.

*11-4.2.7 Testing Equipment and Materials:* The permittee shall, at no expense to the County, provide all labor, equipment and materials and shall conduct all testing required in the presence of, a representative of, or the Engineer of Record, and a representative of the Highway Construction and Engineering Division. Infiltration tests shall be run on all sections of the sewer mains where the ground water level is two (2) feet or more above the top of the sewer pipe. All other sections of the installation, including service laterals, shall be tested for exfiltration. All maintenance access structures shall be tested for infiltration or exfiltration.

*11-4.3 Mandrel Testing of Lines:* At the discretion of the Highway Construction and Engineering Division Inspector, and using the Highway Construction and Engineering Division Deflection Test Gauge, the permittee shall test designated lines for excessive deflection. The deflection gauge is sized to pass through a pipe with no more than 5% reduction in diameter due to manufacturing and installation imperfections. Any line through which the gauge shall not pass shall not be accepted until the line is corrected sufficiently to allow the test gauge to pass. The permittee may use a Deflection Test Gauge furnished by others after cross checking said gauge with the Highway Construction and Engineering Division gauge for dimensional consistency.

*11-4.4 Visual and Television Inspection:* On completion of each block or section of sewer, or at such other times as the Engineer of Record may direct, the block or section of sewer is to be cleaned, tested and inspected. Each section of the sewer is

to show, on examination from either end, a full circle of light between maintenance access structures. The portion of the system being inspected shall be water tight and neatly constructed, with the maintenance access structure tops set permanently to exact position and grade. All defects disclosed by the inspection are to be corrected. Broken or cracked pipes are to be replaced, all deposits removed and the sewers left true to line and grade, entirely clean and ready for use. After all other testing has been successfully completed, a television inspection of any or all lines shall be made upon the request of the operating utility, and at the expense of the operating utility. Any defect disclosed during this inspection shall be corrected by, and at the expense of the permittee before the lines shall be accepted by the Highway Construction and Engineering Division.

**11-5 CERTIFICATION AND RECORD DRAWINGS:** The requirements of Chapter 10, Section 10-6, of this document shall apply, in addition to the following provision:

*11-5.1 Record Drawings:* The record drawings shall also contain all the locations, rim elevations, invert elevations and structure numbers of all sanitary sewer structures in a format in accordance with Highway Construction and Engineering Division requirements.

**11-6 HOUSE CONNECTIONS:** House connections shall not be made until the entire downstream system has been tested and accepted by the operating utility, the Highway Construction and Engineering Division, the Environmental Protection Department, and all other agencies having jurisdiction.

**11-7 ABANDONED FACILITIES:** The provisions of Chapter 3, Section 3-4.3 shall apply.

**11-8 CONFLICT STRUCTURES:** Conflict maintenance access structures involving sanitary sewers are to be avoided, if possible. Under extreme conditions, with the written permission of the Highway Construction and Engineering Division and the approval of all other bodies having jurisdiction, they may be employed, but shall conform to the requirements of Chapter 10, Section 10-9 and Drawing 21 in Appendix A.

# CHAPTER 12 – SEWAGE FORCE MAINS - TECHNICAL REQUIREMENTS

**12-1 STANDARDS:** The provisions of Chapter 11, Section 11-1 shall apply.

## 12-2 MATERIALS

*12-2.1 Pipe, Pipe Fittings, Specials and Valves:* All pipe, pipe fittings, specials, and valves intended for conveying or transmitting of raw sewage under pressure shall conform to the requirements for water mains as set forth in Chapter 10, Section 10-2, except as hereinafter provided. All materials shall be new and unused.

*12-2.1.1 Minimum Pipe Size:* The minimum pipe size for any force main shall be six (6) inches unless otherwise approved by the Highway Construction and Engineering Division. Such approval shall be on a case-by-case basis.

*12-2.1.2 Ductile Iron Pipe and Fittings:* Ductile iron pipe and fittings shall be poly-lined or shall be coated with the manufacturer's coating system. Either alternative shall require Highway Construction and Engineering Division approval prior to construction. Cement mortar lining is not acceptable for force mains.

*12-2.2 Air Release Valves:* Sewage air release valves shall be specifically designed for use on sewage force mains. Bodies and covers shall be cast iron, trim and float shall be stainless steel and the outlet shall be one-half (½) inch, N.P.T. Valves shall automatically release air, gas or vapor under pressure during system operation.

*12-2.3 Plug Valves:* Plug Valves shall be non-lubricated, eccentric type with resilient-faced plugs, and shall have permanently lubricated stainless steel bearings. Valve bodies shall be semi-steel with raised seats, bolted bonnets and adjustable packing. Valves shall be designed to permit re-packing without removing the bonnet and shall be operable in either direction of flow.

Valves over twelve (12) inches in diameter shall have worm gear operators.

*12-2.4 Tapping Sleeves and Valves:* Tapping sleeves shall conform to MSS Standard SP-60. All gaskets shall be neoprene, “O”-ring type. Gasket restraint provisions shall be incorporated into the body of the sleeve. A test plug shall be provided at the outlet throat.

*12-2.4.1* Tapping gate valves six (6) inches through twelve (12) inches shall comply with ANSI/AWWA Standard C-500 or C-509. The valve port shall be free and full to allow unobstructed passage of the portion of the pipe wall cut out during the tap.

*12-2.4.2* Valves sixteen (16) inches and larger shall be furnished with a by-pass valve.

*12-2.4.3* Gate valves six (6) inches through twelve (12) inches shall have a minimum working pressure of two-hundred (200) p.s.i., and be tested at four-hundred (400) p.s.i. Valves sixteen (16) inches through forty-eight (48) inches shall

have a minimum working pressure of one-hundred-fifty (150) p.s.i. and be tested at three-hundred (300) p.s.i.

*12-2.5 Valve Boxes:* The provisions of Chapter 10, Section 10-2.4.9 shall apply.

## 12-3 INSTALLATION

*12-3.1 Requirements:* The installation of all new sewage force mains or modifications to existing force mains shall be in accordance with the requirements for water mains, Chapter 10, Section 10-3, as applicable, except as hereinafter provided.

*12-3.2 Location:* Sewage force mains installed within public right-of-way shall be located as shown on Drawings 7 through 10 in Appendix A, unless otherwise approved.

*12-3.3 Lift Station Locations:* Lift stations shall not be located in public right-of-way except as a last option, and only with Highway Construction and Engineering Division approval.

## 12-4 HYDROSTATIC TESTING

*12-4.1 Standards:* Force mains shall be tested in accordance with AWWA Standard C-600, and the provisions of Chapter 10 of this document. The minimum pressure for testing shall be one-hundred-fifty (150) p.s.i.

*12-4.2 Service Connections:* Service connections shall not be made until the entire installation has been tested and accepted by the operating utility, the Highway Construction and Engineering Division, the Environmental Control Board, Environmental Protection Department, and all bodies having jurisdiction, and all required documents have been submitted to and accepted by all bodies having jurisdiction.

**12-5 CLEANING AND FLUSHING**: Sewage force mains shall be cleaned and flushed after completion of testing, with sufficient clean water to displace all test water and to remove all sand, mud or other deposits. If necessary, other approved methods shall be used to ensure the removal of all such deposits.

**12-6 CERTIFICATIONS AND RECORD DRAWINGS**: The provisions of Chapter 10, Section 10-6 shall apply.

The provisions of Chapter 3, Section 3-4.3 shall apply.

**12-7 ABANDONED FACILITIES**: The provisions of Chapter 3, Section 3-4.3 shall apply.

**12-8 CONFLICT STRUCTURES:** Conflict maintenance access structures involving sewage force mains are to be avoided (see Chapter 10, Section 10-9).

# CHAPTER 13 – GENERAL REQUIREMENTS FOR GAS TRANSMISSION AND DISTRIBUTION, TELECOMMUNICATIONS, TELEPHONE, CABLE TV, FIBER OPTIC CABLE, ALL SIGNAL SYSTEMS AND ELECTRIC POWER INSTALLATIONS

## 13-1 PERMITS

*13-1.1 Requirements:* Permits for construction of all facilities, the revision thereto, including extensions and the maintenance thereof, shall be granted only after the following requirements have been completed:

*13-1.1.1 Paving and Drainage Plan Approval:* Paving and drainage plans for the area, if applicable, have been approved by the Highway Construction and Engineering Division.

*13-1.1.2 Utility Plan Approval:* Construction plans for utility installation have been approved by the Highway Construction and Engineering Division.

*13-1.1.3 Provisions of Chapters 1 through 4:* The applicable provisions of Chapters 1 through 4 of this document have been met.

*13-1.2 Aerial Installations*

*13-1.2.1 New Construction:* The construction of all new aerial, or other related facilities in existing or proposed County right-of-way shall not commence without a permit for same having been issued by the Highway Construction and Engineering Division, except as provided in Chapter 3, Sections 3-2.1, 3-2.2 and 3-2.3, and Sections 13-1.2.2 and 13-1.4 of this document. See Chapter 3, Section 3-3 for notification requirements.

*13-1.2.2 Existing Facilities (Maintenance Work):* The repair, replacement, relocation or removal of existing aerial, or other related facilities including poles and guys, in County right-of-way, not requiring excavation in or within five (5) feet of any roadway may be performed without a Broward County Permit, but in every case, the work-site shall be safely established in accordance with OSHA and MUTCD requirements during the entire period of such operations. See Chapter 3, Section 3-3 for notification requirements.

*13-1.3 Underground Installations*

*13-1.3.1 New Construction:* The construction of all new underground facilities, in existing or proposed County right-of-way, shall not commence without a permit from the Highway Construction and Engineering Division except as provided in Section 13-1.2.2 above; Sections 13-1.4 and 13-1.5 below; and Chapter 3, Sections 3-2.1, 3-2.2 and 3-2.3, of this document. See Chapter 3, Section 3-3 for notification requirements.

*13-1.3.2 Existing Facilities (Maintenance Work):* The repair, replacement, relocation or removal of existing underground facilities in public right-of-way, not requiring excavation in or within five (5) feet of any roadway may be performed

without a permit but, in every case, the work-site shall be safely established in accordance with OSHA and MUTCD requirements during the entire period of such operation (see Chapter 3, Section 3-3 for notification requirements).

*13-1.4 Exception to Permit Requirements:* Work performed under the following circumstances may be performed without a permit from the Highway Construction and Engineering Division:

Maintenance work anywhere in public right-of-way, when such work is required on short notice due to imminent failure of a utility, shall be considered emergency work and the procedures outlined in Chapter 3, Section 3-2.3 shall be followed.

*13-1.5 Installations in Easements:* The construction, repair, replacement, relocation or removal of any utility installation in an easement dedicated to the public and adjacent to a public road under Broward County jurisdiction shall not require a Highway Construction and Engineering Division permit, but the work-site shall be safely established in accordance with all applicable OSHA and MUTCD requirements during the entire period of such operations.

## 13-2 PLANS AND SPECIFICATIONS

*13-2.1 Plan Size:* Four (4) sets of plans shall be submitted on white prints with blue or black lines. Plans shall be submitted on sheets no larger than 11" X 17" except when prearranged with the Highway Construction and Engineering Division. Small projects may be submitted on legal size paper, provided that scale requirements are met.

*13-2.1.1 Drawings for Borings*: When performing a bore, the drawing shall include a cross section (plan and profile) of the area to be bored, show and locate with dimensions all existing utilities and roadway facilities, and depict the new facility maintaining a minimum of twelve (12) inches of clearance from all existing utilities for the entire crossing.

*13-2.2 Facilities:* Plans shall show and locate by dimension the proposed project facilities and all existing and other planned facilities sufficiently to permit assessment of the compatibility of the work with the existing systems. All existing utilities that have been abandoned, but are still in the ground, shall be shown on the plans and labeled as “abandoned.”

*13-2.3 Specifications:* Specifications for the proposed work shall be submitted with the plans, or a notation shall be made on the plans stating that all installations shall be in conformity with the “Minimum Standards.”

*13-2.4 Plan Layout:* Any general area layout sheets shall be on a scale of 300' or less to the inch. Detailed plans shall be of a scale sufficient to show the proposed work and the right-of-way area clearly with 1"= 20' recommended. Sufficient information shall be shown on the permit drawing to allow for precise location in the field. Elevations shall be based on the National Geodetic Vertical Datum (NGVD).

*13-2.5 Legends:* All plans shall show suitable legends.

*13-2.6 Existing Pavement Widths:* Existing pavement widths shall be indicated by dimensions, notes and light shading and shall be located by dimensions within the right-of-way.

*13-2.7 Existing Public Right-of-Way Widths:* Existing public right-of-way widths shall be indicated by dimensions and notes.

*13-2.8 Existing Sidewalk Widths:* Existing sidewalk widths shall be indicated by dimensions and notes and shall be located by dimension from the edge of pavement and the right-of-way/property line.

*13-2.9 Locations of Underground Utilities:* When locations of underground utilities cannot be determined, this shall be so indicated by a note.

*13-2.10 Street Names:* All street names shall be shown.

*13-2.11 Identity of Utility Company:* The identity of the operating and maintaining utility shall be indicated on the plans.

*13-2.12 Maintenance Work Requiring a Permit:* For all maintenance work requiring a permit, a drawing indicating location, right-of-way layout, proposed work area and nature of the work shall be submitted to the Highway Construction and Engineering Division for approval and permitting.

*13-2.13 Emergency Work:* For emergency work, a record drawing shall be submitted to the Highway Construction and Engineering Division within ten (10) working days after the work is done, with the information thereon as per Section 13-2.12 above.

*13-2.14 Plans Within Limits of Broward County Road Project:* Plans that fall within the limits of any current or proposed Broward County Road Project or Neighborhood Improvement Project shall be submitted to the assigned Broward County Project Manager and the Consulting Engineer for review and approval prior to submittal for permitting. A letter of approval shall be submitted with the permit package.

*13-2.15 Utilization of Public Right-of-Way:* When public right-of-way is utilized during construction, the utility shall give the Highway Construction and Engineering Division twenty-four (24) hours advance notification of start of work.

**13-3 RECORD DRAWINGS:** The provisions of Chapter 3, Section 3-8.2 notwithstanding, the Highway Construction and Engineering Division shall not routinely require record drawings, but may require them on a case-by-case basis. Record drawings, when required, shall be submitted within three (3) weeks after completion of the work and shall include a statement, signed by the Engineering Supervisor of the utility company, certifying the accuracy of the “as-built” locations and elevations of the subject installation as shown on the drawings and further certifying that the permitted installation was done in substantial accordance with the approved drawings.

Record drawings shall show “as-built” locations of all mains, services, tees, valves, maintenance access structures, handholes, pull boxes, etc., changes of slope or

direction, and terminal points of the installation in a format in accordance with Highway Construction and Engineering Division requirements.

In every case, when the design drawings have been produced using CAD system, the “as-built” or record drawings shall also be produced on the CAD system and the Engineer of Record shall also submit a copy of the storage medium containing the information from which the “as- built” drawings were produced.

# CHAPTER 14 – GAS TRANSMISSION AND DISTRIBUTION SYSTEMS - SPECIAL REQUIREMENTS

**14-1 PERMITS:** The provisions of Chapter 13, Section 13-1 shall apply.

**14-2 FEE AND SECURITY REQUIREMENTS:** The provisions of Chapters 1 through 4 shall apply.

## 14-3 PLANS AND SPECIFICATIONS

*14-3.1 Chapter 13 Provisions:* The provisions of Chapter 13, Section 13-2 shall apply.

*14-3.2 Detailed Plans:* The detailed plans shall show gas main sizes, approximate locations of valves, approximate locations of gas service connections and dimensioned offsets of gas mains from property lines.

*14-3.3 Residential Gas Services:* Residential gas services to be installed during the original installation of mains shall be indicated but need not have dimensioned locations on original plans. Plans for connections after installation of main(s) shall be noted and explained.

**14-4 STANDARDS:** All gas transmission and/or distribution systems constructed in public right-of-way shall be in accordance with the following standards, specifications and regulations. All installations shall be in accordance with the manufacturer's recommendations except as modified by these Standards.

- USDOT "Pipeline Safety Regulations"
- Florida Public Service Commission "Gas Transmission and Distribution Piping Systems"
- FHWA "Manual on Uniform Traffic Control Devices"
- FDOT "Utility Accommodation Guide"

**14-5 MATERIALS:** All gas piping and fittings shall be designed to meet the requirements of the above publications. All materials shall be new and unused.

## 14-6 INSTALLATION

*14-6.1 Cover:* The minimum cover on all gas lines and service laterals in public right-of-way shall be thirty-six (36) inches unless installed in approved sleeves, at a depth approved by the Highway Construction and Engineering Division.

*14-6.2 Location:* In general, gas mains shall be located as shown in Drawings 7 through 10 in Appendix A, unless otherwise approved by the Highway Construction and Engineering Division.

When carrier pipe is made of non-metallic material a locating tape shall be placed one (1) foot directly above it.

**14-7 CONSTRUCTION PROCEDURES:** Construction procedures shall be in accordance with the provisions of Chapter 3 of this document. Testing of facilities shall be in accordance with applicable requirements of the USDOT "Pipeline Safety Regulations" and Florida Public Service Commission regulations.

**14-8 TESTING:** All gas distribution facilities shall be tested in accordance with the applicable standards listed in Section 14-4 above, as well as any contract requirements. All tests shall be certified by the Engineer of Record, who shall provide copies to Highway Construction and Engineering Division, to meet completion documentation requirements. Testing of backfill material and compaction, and roadway restoration however, shall be as per Chapter 3, Sections 3-6.6 and 3-6.7, and Drawings 11, 12, 13 and 14 in Appendix A.

**14-9 ABANDONED FACILITIES:** The provisions of Chapter 3, Section 3-4.3 shall apply.

**14-10 RECORD DRAWINGS:** The provisions of Chapter 13, Section 13-3 shall apply.

# CHAPTER 15 – INSTALLATION OF TELEPHONE, CABLE TV OR OTHER SIGNAL SYSTEMS

**15-1 PERMITS:** The provisions of Chapter 13, Section 13-1 shall apply.

## 15-2 FEE AND SECURITY REQUIREMENTS

*15-2.1 Plan Submittal:* Notwithstanding the requirements of Chapter 4, Section 4-1.1, plans submitted for approval need not be signed or sealed by an Engineer certified in the State of Florida, if prepared by the operating utility and may be submitted with the permit application. All other portions of Chapters 1 through 4 shall be met prior to issuance of a permit.

*15-2.2 Fee and Security Requirements:* No fees or security required shall be payable by any Telephone Service Corporation for work performed pursuant to this Chapter if work is performed by said corporation's own employees, but security shall be required if the work is performed by another entity.

## 15-3 PLANS AND SPECIFICATIONS

*15-3.1 Chapter 13 Provisions:* The provisions of Chapter 13, Section 13-2 shall apply.

*15-3.2 Detailed Drawings:* The detailed drawings shall show the number, size, service and location of all underground cables and conduits, the approximate locations of all valves, hydrants, poles, maintenance access structures and terminal boxes and the size, service and material of all other piping. All utility mains shall be located by dimensioned offsets from the right-of-way lines and by the elevations, as determined from the appropriate utility companies' "as-built" drawing records.

*15-3.3 Service Drops:* Service drops to be installed during the original installation of the common cable shall be indicated on the plans but need not have dimensioned locations.

**15-4 STANDARDS:** Telephone and cable television or other signal carrying systems constructed in public right-of-way shall be in accordance with the following standards and regulations, and in strict accordance with manufacturer's recommendations as modified by these Standards:

- National Electric Safety Code
- Federal Communications Commission Regulations
- FHWA "Manual on Uniform Traffic Control Devices"
- FDOT "Utility Accommodation Guide"

## 15-5 CONDUIT

*15-5.1 Steel Conduit:* Steel conduit shall be minimum Schedule 40, hot dip galvanized after threading, conforming to ANSI C-80.1.

*15-5.2 PVC Conduit:* PVC conduit shall conform to ASTM F512 with minimum wall thickness of Series DR-26.

**15-6 INSTALLATION:** The provisions of Chapters 1 through 4 of this document shall apply, in addition to the following requirements:

*15-6.1 Method:* Telephone, television or other signal carrying cable installed in an existing or planned paved area in any public right-of-way, shall be carried in approved steel, concrete or high density polyethylene conduit.

*15-6.2 Cover:* The minimum cover for any telephone, cable television or other signal carrying cable or conduit in any public right-of-way shall be thirty (30) inches. Traffic Engineering Division communications/interconnect cable/conduit shall be at a minimum of thirty-six (36) inches. There shall be a minimum of six (6) inches separation between Traffic Engineering Division communications/ interconnect cable/conduit and all other types of utilities.

*15-6.3 Location:* In general, and where practicable, all underground signal carrying cable installations shall be in accordance with Drawings 7 through 10 in Appendix A.

**15-7 TESTING:** Testing of telephone, cable television or other signal carrying facilities, shall be to utility department requirements and certified by the Engineer of Record, who shall provide copies to the Highway Construction and Engineering Division. Testing of backfill and compaction, and right-of-way restoration shall be as per Chapter 3, Sections 3-6.6 and 3-6.7, and Drawings 11, 12, 13 and 14 in Appendix A.

**15-8 ABANDONED FACILITIES:** The provisions of Chapter 3, Section 3-4.3 shall apply.

**15-9 RECORD DRAWINGS:** The provisions of Chapter 13, Section 13-3 shall apply.

# CHAPTER 16 – ELECTRIC POWER INSTALLATIONS

**16-1 PERMITS:** The provisions of Chapter 13-1 shall apply.

*16-1.1 Installations in Easements:* The provisions of Chapter 13-1.5 shall apply.

*16-1.2 Exceptions to Permit Requirements:* Work performed under the following circumstances may be performed without a permit from the Highway Construction and Engineering Division:

Maintenance work anywhere in public right-of-way, when such work is required on short notice due to imminent failure of a power cable, shall be considered emergency work and the procedures outlined in Chapter 3, Section 3-2.3 shall be followed.

## 16-2 FEE AND SECURITY REQUIREMENTS

*16-2.1 Plan Submittal:* Notwithstanding the requirements of Chapter 4, Section 4-1.1, plans submitted for approval need not be signed or sealed by an Engineer certified in the State of Florida, if prepared by the operating utility and may be submitted with the permit application. All applicable portions of Chapters 1 through 4 shall be met prior to issuance of any permit.

*16-2.2 Fees or Security:* No fees or security shall be payable by any Electric Service Corporation for work performed pursuant to this Chapter if work is performed by said corporation's own employees, but security shall be required if the work is performed by another entity.

**16-3 PLANS AND SPECIFICATIONS:** The provisions of Chapter 13, Section 13-2 3 shall apply.

*16-3.1 Detailed Plans:* The detailed plans shall show all proposed cable, conduit and duct sizes, maintenance access structures and pole locations, right-of-way lines and widths, all existing utilities and the dimensioned offsets of the proposed facilities from the right-of-way lines.

*16-3.2 Aerial and Underground Service Lines:* Aerial service lines shall be indicated but need not be dimensioned. Underground service lines shall be shown and located by dimension from the lot lines of the properties they are serving.

**16-4 STANDARDS:** All electric power system installations constructed in public right-of-way shall be in accordance with the applicable provisions of this document and the following standards and regulations:

- National Electric Safety Code
- State of Florida Public Service Commission Regulations
- FDOT "Utility Accommodation Guide"
- FDOT "Design Standards"

## 16-5 CONDUIT

*16-5.1 Steel Conduit:* Steel conduit shall be hot-dipped galvanized in accordance with ANSI Standard C-80.1.

*16-5.2 PVC Conduit*: PVC conduit shall meet or exceed the requirements ASTM F512.

*16-5.3 Duct Banks:* Duct banks in which conduits are vertically stacked shall be encased with a minimum three (3) inches envelope of 3000 PSI concrete.

Precast concrete duct banks shall be constructed with 5000 PSI concrete and shall have a minimum of two (2) inches cover over the conduit and the reinforcing steel.

**16-6 INSTALLATIONS:** The provisions of Chapters 1 through 4 of this document shall apply, in addition to the following requirements:

*16-6.1 Cover:* All underground electric power cable installed in any public right-of-way shall be carried in approved steel or plastic conduit, and shall have a minimum of thirty-six (36) inches cover, unless otherwise approved.

*16-6.2 Location:* In general, all underground electric power installations shall be located in accordance with Drawings 7 through 10 in Appendix A.

**16-7 TESTING:** Testing of electric power facilities shall be performed to applicable standards and certified by the Engineer of Record, who shall provide copies to the Highway Construction and Engineering Division. Testing of backfill and compaction and roadway restoration, however, shall be as per Chapter 3, Sections 3-6.6 and 3-6.7 and Drawings 11, 12, 13 and 14 in Appendix A.

**16-8 ABANDONED FACILITIES:** The provisions of Chapter 3, Section 3-4.3 shall apply.

**16-9 RECORD DRAWINGS:** The provisions of Chapter 13, Section 13-3 shall apply.

# CHAPTER 17 – LANDSCAPE, IRRIGATION AND HANDSCAPE - SPECIAL REQUIREMENTS

## 17-1 PERMITS

*17-1.1 New Construction:* A permit shall be required for construction of irrigation, handscape or tree trimming in public right-of-way except as provided in Chapter 3, Sections 3-2.1, 3-2.2 and 3-2.3. Such permit shall be granted only after the following requirements (as applicable) have been met:

*17-1.1.1 Subdivision Plats:* A subdivision plat for the area under construction has been recorded in the Broward County Clerk's Office. This requirement shall not apply to the installation or maintenance of lines in or through areas already developed or within developed right-of-way, or right-of-way extending across undeveloped areas.

*17-1.1.2 Paving and Drainage Plan Approval:* Paving and drainage plans for this area have been approved by the Highway Construction and Engineering Division.

*17-1.1.3 Plan and Specification Approval:* Construction plans and specifications for the installation or modification of irrigation and/or landscaping have been approved by the Highway Construction and Engineering Division.

*17-1.1.4 Beautification Agreement Approval:* A Beautification Agreement for irrigation and/or planting has been approved by the County Commission and recorded in the public records. A requirement of the agreement is that at least 50% of the landscaping shall be native species.

To obtain a copy of the standard Beautification Agreement used by Broward County, contact the Highway Construction and Engineering Division.

*17-1.2 Maintenance:* A permit shall not be required for minor maintenance of irrigation, trimming of trees or shrubs, or for mowing of grass.

**17-2 PERMIT FEES AND MAINTENANCE SECURITY:** The separate fee and security amounts are to be computed in accordance with the provisions of Chapter 4, Section 4-3.

*17-2.1 Irrigation Lines:* No separate maintenance security shall be required to cover landscape irrigation lines installed prior to the installation of pavement in new subdivisions provided that a subdivision maintenance security is posted which clearly states that said irrigation lines are covered by the security.

*17-2.2 Swale Irrigation:* No maintenance security shall be required for swale irrigation abutting a one or two unit residence site provided that the installation is to be made by the owner of said site, or by a qualified Contractor hired by the owner.

**17-3 PLANS AND SPECIFICATIONS:** The provisions of Chapter 5, Section 5-3 shall apply.

# CHAPTER 18 – LANDSCAPE PLANTING - TECHNICAL REQUIREMENTS

**18-1 STANDARDS:** Planting within public right-of-way shall be performed in accordance with the following documents except as modified hereinafter, and with the provisions of this Chapter:

- FDOT "Green Book"
- FDOT Roadway "Design Standards," Index 546
- Broward County "Land Development Code"
- Provisions of Chapters 1 through 4 of this document

## 18-2 MATERIALS

*18-2.1 Plant Material:* All plant material shall be Florida Grade No. 1 or better at time of planting, as set forth in the Florida Department of Agriculture "Grade Standards for Nursery Plants, Part 1," except as noted in the following:

*18-2.1.1 Prohibited Trees:* Street trees prohibited for planting in medians and public right-of-way:

- Schinus terebinthifolius/Brazilian Pepper
- Cassarina spp/Australian Pine
- Melaleuca spp/Cajeput, Punk Tree
- Ficus benjamina/Weeping Fig
- Ficus nitida/Cuban Laurel
- Ficuselastica/Rubber Tree
- Acacia ariculaeformis/Earleaf Acacia
- Bischofia javonica/Bishopwood
- Enterlobium cyclocarpum/Ear Tree

*18-2.1.2 Plant Selection:* Plant selection shall be appropriate to site conditions, i.e., soil, topography, geographic location, etc.

*18-2.1.3 Xeriscape:* Plant selection and installation should conform to Xeriscape principles in accordance with guidelines established by South Florida Water Management District.

*18-2.1.4 Plant Conformance:* Plant selection should conform to the following:

- South Florida Water Mgt. District "Xeriscape Principles and Guidelines"
- Florida Division of Forestry "Guidelines to South Florida Plants"
- Florida Power and Light "Plant the Right Tree in the Right Place"
- Broward County Ordinance No. 1999-07 "Preservation and Abuse"
- Broward County Zoning Code, Article VIII "Functional Landscaping and

Xeriscaping”

## 18-3 INSTALLATION

*18-3.1 Landscape Development Features:* Earth berming and other landscape development features may only be installed in public right-of-way where and as approved by the Highway Construction and Engineering Division, and may be removed to facilitate right-of-way construction.

*18-3.2 Shrub and Ground Cover:* Where not specifically addressed in the above referenced documents, shrub and ground cover which shall grow to an ultimate height (unpruned) exceeding twenty-four (24) inches, shall not be utilized in medians adjacent to left turn storage lanes, or thirty (30) inches ultimate height (unpruned) adjacent to the turn lanes transition (height shall be measured from the lowest adjacent edge of pavement to the top of the plant).

*18-3.3 Areas within Clear Sight Corridor:* For areas within the clear sight corridor, shrub and ground cover shall be designed, installed and maintained at a height, measured from the lowest adjacent edge of pavement to the top of the plant, not to exceed:

- Thirty (30) inches when adjacent to through travel lane
- Thirty (30) inches when adjacent to the turn lane transitions
- Twenty-four (24) inches when adjacent to the turn lanes storage portion

Trees, shrubs, etc., may be installed in medians adjacent to through lanes and left turn lane transitions where minimum clearances (vertical and horizontal) and spacing are provided according to the safety standards of FDOT and Broward County.

*18-3.4 Plantings in Medians:* No plantings, except grass, shall be allowed in medians six (6) feet or less in width.

*18-3.5 Sight Distance:* Plantings shall not restrict sight distance to less than that required by the standards of FDOT and Broward County. Proper sight distance shall be provided for drivers to execute all permitted movements at or approaching any “roadway/roadway” or “roadway/driveway” intersection.

*18-3.6 Plantings that Obscure Signs or Restrict Access:* Plantings shall not obscure street name signs, traffic related regulatory or informational signs, traffic signalization, school flashers or bus-stop-related signs or facilities. Plantings shall not restrict access to sidewalks, bike paths or mass transit facilities.

*18-3.7 Trees near Exfiltration Trench:* No tree may be installed closer to an exfiltration trench than the tree dripline or tree height, at maturity, whichever is greater.

*18-3.8 Trees-Vertical Clearance:* The minimum distance from roadway to tree overhang shall be at least sixteen (16) feet.

# CHAPTER 19 – LANDSCAPE IRRIGATION - TECHNICAL REQUIREMENTS

**19-1 STANDARDS:** All landscape irrigation systems constructed in public right-of-way shall be in accordance with the American Water Works Association (AWWA) "Standards for Pressure Pipes," the American Society for Testing Materials (ASTM), the Florida Irrigation Society "Standards and Specifications for Turf and Landscape Irrigation" and the requirements of governmental agencies having jurisdiction, except as modified by the provisions of this document, and shall be installed in accordance with the manufacturer's recommendations.

## 19-2 MATERIALS

*19-2.1 Irrigation Pipe:* All irrigation pipe upstream of zone control valves shall be PVC conforming to ASTM Standard D-2241, D-1784, Type 1120 or 1220. Pressurized pipe two-and-one-half (2-½) inches and larger shall be Class 200, gasket type, with rubber rings that meet ASTM Standards D-1869 and F-477. All solvent weld main lines shall have, as a minimum, Schedule 40 thickness. All materials shall be new and unused.

Solvent weld joints may be used on main lines two-and-one-half (2-½) inches and three (3) inches in size, provided that the design criteria is such that the Surge Pressure, as calculated with the following formula, does not exceed the Burst Pressure:

$$P = .070 \frac{VL}{T}$$ where:

P = Pressure rise (p.s.i.) above static pressure
V = Velocity of flow (ft./sec.)
L = Length of pipe (ft.) on pressure side of valve
T = Closing time of valve (sec.)

*19-2.2 Laterals:* Laterals downstream of the zone control valves shall be PVC meeting ASTM Standard D-2241, Type 1120, SDR 26, Class 200, solvent weld type.

*19-2.3 Fittings:* All fittings for both pressurized and non-pressurized pipe shall be PVC, with minimum Schedule 40 thickness, meeting ASTM Standards D-2467 and D-2464 respectively.

*19-2.4 Pipe Identification:* All pipe and fittings shall bear the manufacturer's trademark name, material designation, applicable I.P.S., size, schedule and AWWA or N.S.F. seal of approval.

*19-2.5 Minimum Working Pressure:* All valves in public right-of-way shall have a minimum working pressure of one-hundred-and-fifty (150) p.s.i. and each shall conform to the AWWA Standard for its type.

Valve boxes and covers in public right-of-way shall be of traffic bearing design (capable of supporting an AASHTO H-20 loading).

*19-2.6 Irrigation System Controls:* All landscape irrigation systems shall be automatically controlled and have a rain or moisture sensor that shall override the irrigation cycle when adequate rainfall has occurred. All controls shall be of a normally closed type.

*19-2.7 Back-flow Prevention:* A back-flow prevention device shall be required when using a potable water supply and shall be installed per the requirements of the Broward County Board of Health and of the utility company to whose lines the irrigation system is to be connected.

*19-2.8 Shut-off Devices:* Shut-off devices shall be installed in each irrigation system, as follows, to protect roadways from undermining caused by main line piping rupture or by a vehicle running over the valve assembly and breaking the main line:

1. Main line pump stations shall have a main control valve with a sustaining pilot which shall limit flow to a preset amount.
2. Systems supplied by a City water system shall have a main control valve with a sustaining pilot, fixed flow plate and a normally closed solenoid pilot.
3. All systems shall have a low pressure shut-down feature to de-activate the pump station (for pump-supplied systems) or to close the solenoid valve (for city-water-supplied systems).
4. Control panels for all systems shall have a domed flashing warning light to indicate such shutdown.

## 19-3 INSTALLATION

*19-3.1 Irrigation Pipes under Paved Areas:* Irrigation pipes under paved areas shall be sleeved, shall have a minimum of thirty-six (36) inches cover and shall be installed in accordance with the provisions of Chapter 3, Section 3-4.5.

*19-3.2 Minimum Cover and Location of Mains and Headers:* All mains and headers in unpaved areas shall have a minimum of thirty (30) inches cover. Branches shall have a minimum of twelve (12) inches cover. Longitudinal lines should not be run within shoulder areas unless necessary. In uncurbed sections of roadway, sprinkler heads within five (5) feet of pavement shall contain a ground support flange or be provided with an approved flexible means of connection to the lateral pipe. Sprinkler heads shall be located so that they do not spray sidewalks.

*19-3.3 Thrust Blocks/Joint Restraints:* Thrust blocks shall not be permitted in public right-of-way. Permittee shall provide an acceptable type of joint restraint, such as Megalug, Flex-Ring, etc.

*19-3.4 Electrical Requirements:* All electrical installations shall meet or exceed the requirements of the National Electric Safety Code. All electrically operated valves shall be 24-volt (or less) actuated.

Low voltage wiring (32 volts or less) shall have a minimum cover of thirty (30) inches. All other wiring shall have a minimum cover of thirty-six (36) inches, and be

run in a separate trench from water lines.

*19-3.5 Objectionable Material:* No rock or other objectionable material shall be in contact with, or within six (6) inches of any irrigation pipe.

*19-3.6 Above-ground Installations:* Above-ground installations in public right-of-way shall be located outside of "clear zones." Above-ground installations shall only be permitted in "clear zones" if it is absolutely necessary, and in such case they shall be of breakaway design, or shall be protected by guardrail or other approved means.

*19-3.7 Chapter 3 Provisions:* All work in public right-of-way shall be in accordance with the applicable provisions of Chapter 3 of this document as well as the provisions of this Chapter.

## 19-4 INSPECTION AND TESTING

*19-4.1 Inspection:* All installations in public right-of-way shall be inspected by a Highway Construction and Engineering Division Inspector for compliance with the "Minimum Standards" and by other agencies having jurisdiction.

*19-4.2 Hydrostatic Testing:* Hydrostatic testing shall be performed on all parts of the main line installation upstream of zone valves in the presence of a County Engineering Inspector in accordance with the provisions of Chapter 10 of this document.

*19-4.3 Backfilling:* Lines downstream of zone valves shall be brought to operating pressure and all joints visually inspected for leaks by the County Inspector prior to backfilling. When the inspection is complete, the lines shall be deactivated, all leaks repaired, and the lines reactivated for a final inspection. After approval by the Inspector, the trenches may be backfilled. Density testing may be required in accordance with Chapter 3, Sections 3-6.7, and 3-6.8, and applicable drawings in Appendix A.

*19-4.4 Final Inspection:* For installations in public right-of-way, a final inspection shall be made, jointly, by representatives of the Highway Construction and Engineering Division, the Engineer of Record or Landscape Architect, the permittee and the maintaining entity.

**19-5 RESTORATION:** The entire work area utilized for the performance of any permitted work shall be restored by the permittee to meet current standards for new construction, as set forth in these Minimum Standards, except as directed by the County Inspector or as provided elsewhere in this document.

**19-6 CERTIFICATION AND RECORD DRAWINGS:** Prior to scheduling final inspection for acceptance of irrigation systems, except as provided in Chapter 3, Section 3-2.2.3, the Engineer of Record or Landscape Architect shall provide to the Highway Construction and Engineering Division, one (1) set of record drawings showing the diameter, location and elevation of all mains, branches and control lines plus the locations of all pumps, valves and controls, signed and sealed, for the accuracy of the "as-built" location and elevation information, by a Professional

Surveyor and Mapper licensed in the State of Florida, and bearing the Engineer of Record's or Landscape Architect's certification.

In every case, when the design drawings have been produced using a CAD system, the "as-built" or record drawings shall also be produced on the CAD system and the Engineer of Record or Landscape Architect shall also submit a copy of the storage medium containing the information from which the as-built drawings were produced.

# CHAPTER 20 – MONITORING WELL INSTALLATIONS

## 20-1 PERMITS

*20-1.1 Requirements:* The construction, maintenance, or repair of any installation of monitoring wells in any public right-of-way shall be in accordance with the requirements of the South Florida Water Management District and shall not commence prior to issuance of a permit by the Highway Construction and Engineering Division.

*20-1.2 Licensing:* A permit for construction shall only be issued to a water well Contractor who is currently licensed by the South Florida Water Management District.

**20-2 PERMIT REQUIREMENTS:** Notwithstanding the requirements of Chapter 4, Section 1, plans submitted for approval need not be signed and sealed by an Engineer certified in the State of Florida, if prepared by a graduate Geologist, or a graduate Environmental Engineer. All other applicable portions of Chapters 1 through 4 shall be met prior to the issuance of any permit.

**20-3 PERMIT FEES AND MAINTENANCE SECURITY:** Separate fee and security amounts are to be computed in accordance with the provisions of Chapter 4.

## 20-4 PLANS AND SPECIFICATIONS

*20-4.1 Plan Submittal Requirements:* All plans shall be submitted on white prints with blue or black lines. In addition to the proposed project, they shall show all existing facilities as well as all other planned facilities sufficiently to permit the assessment of the compatibility of the proposed work to the existing systems. Plans may be submitted on legal size paper, provided that scale requirements are met.

*20-4.2 Right-of-Way Dimensions and Legends:* Dimensions of right-of-way widths shall be indicated. All plans shall show suitable legends.

*20-4.3 Detailed Plans:* The detailed plans shall show the proposed monitoring well location, and dimensioned offset of the monitoring well from right-of-way lines, and existing edge of pavement.

*20-4.4 Existing Pavements:* Existing pavements shall be indicated by notes and the pavement width and location within the right-of-way shall be shown by dimensions.

*20-4.5 Street Names:* All street names shall be shown.

*20-4.6 Well Covers:* All wells shall be covered with a traffic bearing, flush-mounted steel maintenance access structure cover and housing, installed at grade.

*20-4.7 Cross-sections:* A detailed cross-section of the monitoring well shall be submitted indicating details of locking cap, depth, pipe diameter, well screening, and high water table elevation, in accordance with Drawing 23 in Appendix A.

*20-4.8 Construction in an Existing Travel Lane:* Construction of a monitoring well in an existing travel lane of any road under County jurisdiction is prohibited except when unavoidable, in which case special provisions shall be made to protect the wellhead and the traveled way.

**20-5 MATERIAL:** All material used in the construction of monitoring wells shall be subject to the approval of the Highway Construction and Engineering Division.

*20-5.1 Well Casings:* Well casings shall generally be of PVC. However, in cases of actual or suspected ground water contamination by organic chemicals, PVC may not be the optimal casing material to use. In such cases, the casing shall be of stainless steel unless another material is approved. PVC pipe shall be Schedule 40. All connections shall be threaded.

*20-5.2 Well Screens:* Well screens shall be of the same material as the casing unless otherwise approved, and the slot size shall be compatible with the grain sizes of the surrounding filter pack material.

*20-5.3 Filter Pack Material:* Filter pack material shall consist of a mixture of clean sand and gravel of selected grain sizes and gradation. This material is to be installed in uniform thickness in the annular space (two (2) inches minimum) between the well screen and the wall of the well bore. The filter pack should have a larger average grain size and a smaller coefficient of uniformity than the aquifer material.

**20-6 INSTALLATION:** The provisions of Chapter 3 shall apply.

**20-7 RECORD DRAWINGS:** On completion of construction, the Contractor permittee shall furnish the Highway Construction and Engineering Division with a "Well Completion Report." The provisions of Chapter 3, Section 3-8.2 notwithstanding, this report need not be certified.

**20-8 ABANDONED FACILITIES:** The provisions of Chapter 3, Section 3-4.3 shall apply.

# APPENDIX A
## DRAWING INDEX


| DRAWING | DESCRIPTION | PAGE |
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| 3. | New Construction, 4-Lane Arterial, Divided Urban - Typical Section | A3 |
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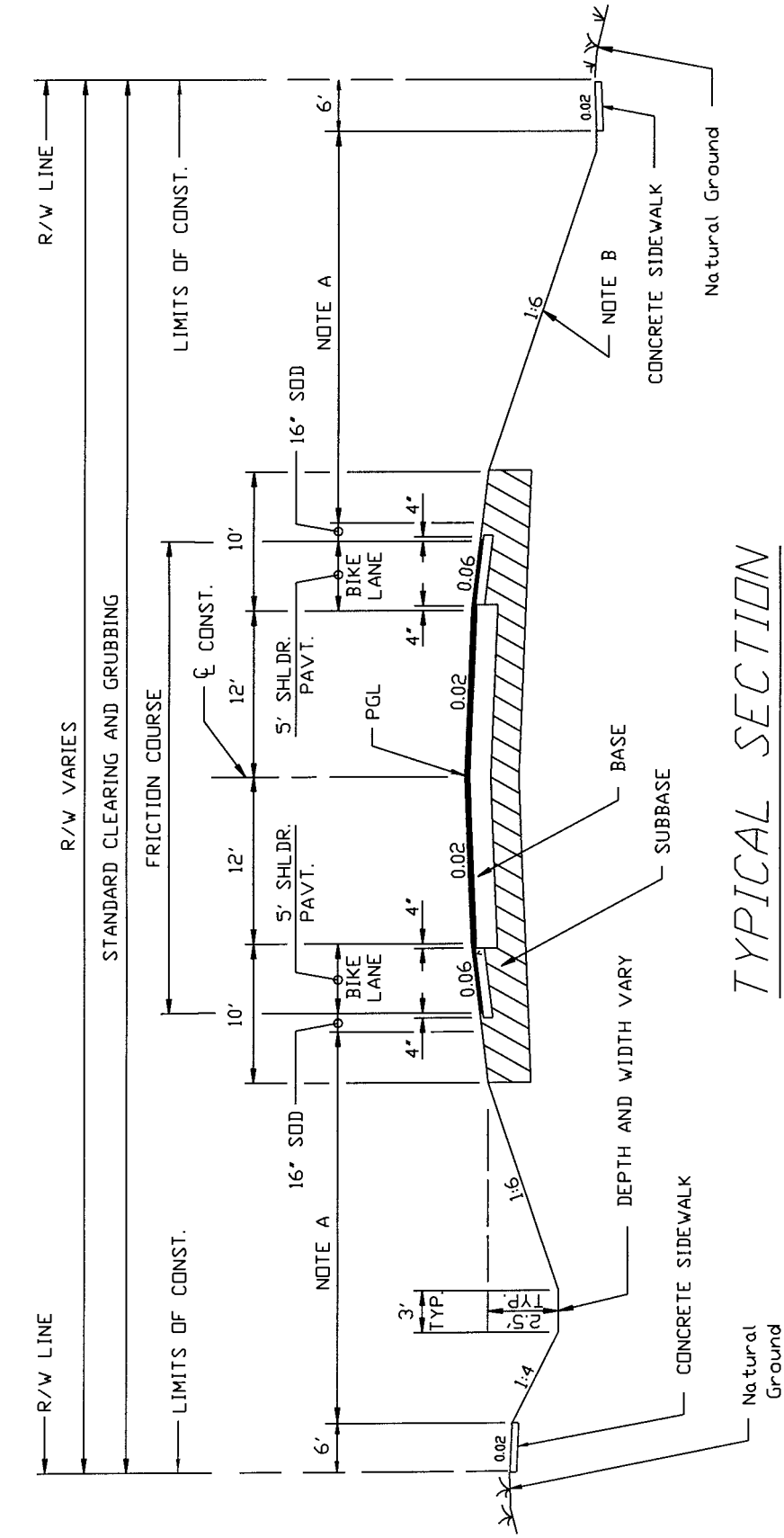
NEW CONSTRUCTION WITH DESIGNATED OR UNDESIGNATED BIKE LANE




TYPICAL SECTION
N.T.S.

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

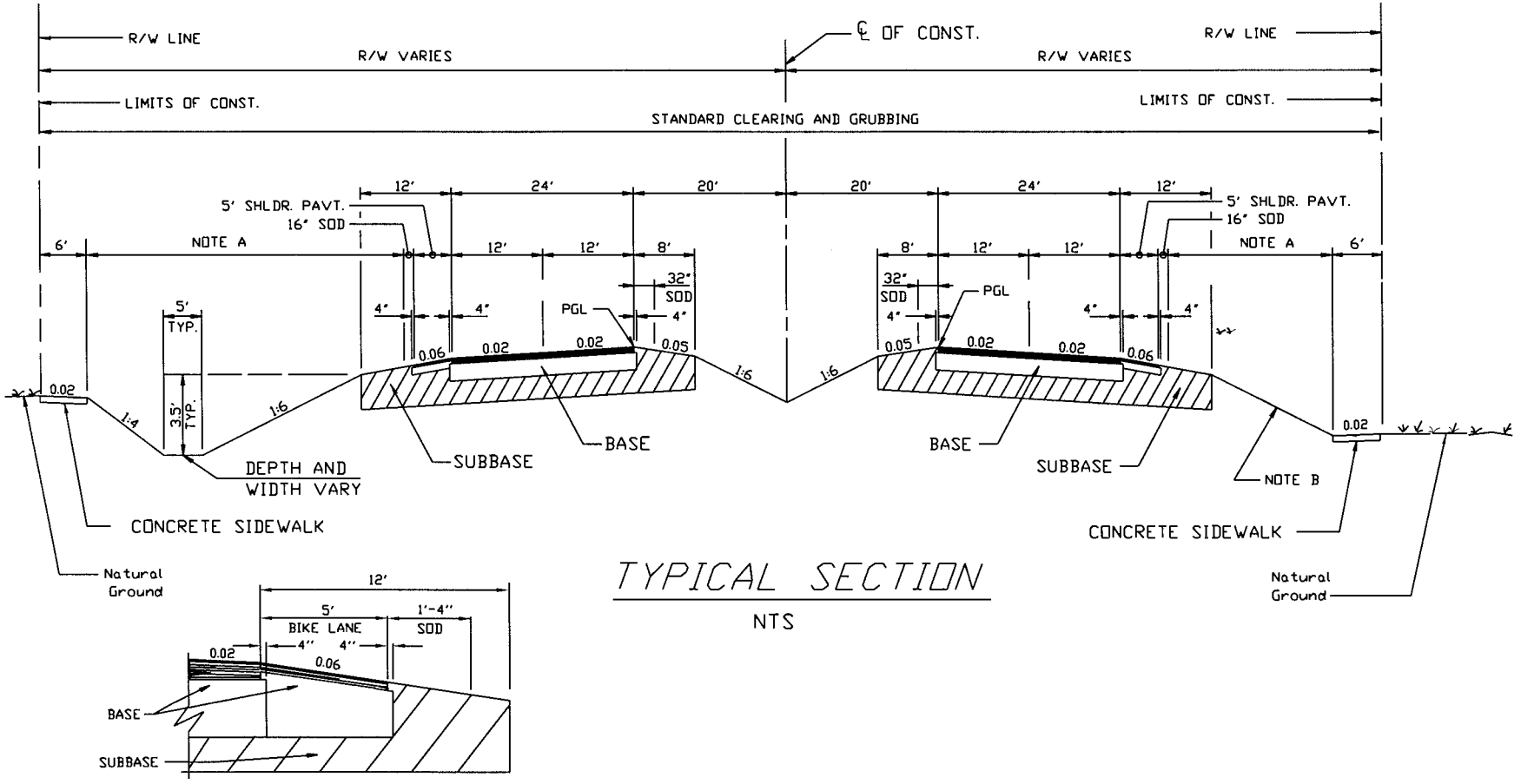
ULTIMATE 2 - LANE (2-WAY)
COLLECTOR
UNDIVIDED RURAL

Approved by: DJH
Revised: 6/01/05 WRH

1
DWG. NO.

A 1

# NEW CONSTRUCTION WITH DESIGNATED OR UNDESIGNATED BIKE LANE




## TYPICAL SECTION

NTS




## SHOULDER PAVEMENT DETAIL -NTS

SEE DWG. NO. 6, SHEET 2 OF 2, FOR DRAWING NOTES.

| | | | |
|---|---|---|---|
| BROWARD COUNTY<br>HIGHWAY CONSTRUCTION<br>AND ENGINEERING DIVISION | 4 - LANE<br>ARTERIAL / COLLECTOR<br>DIVIDED RURAL | Approved by: DJH<br>Revised: 6/01/05 WRH | 2<br>DWG. NO. |

A 2

City of Fort Lauderdale
Bid 12204-293
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Exhibit 5
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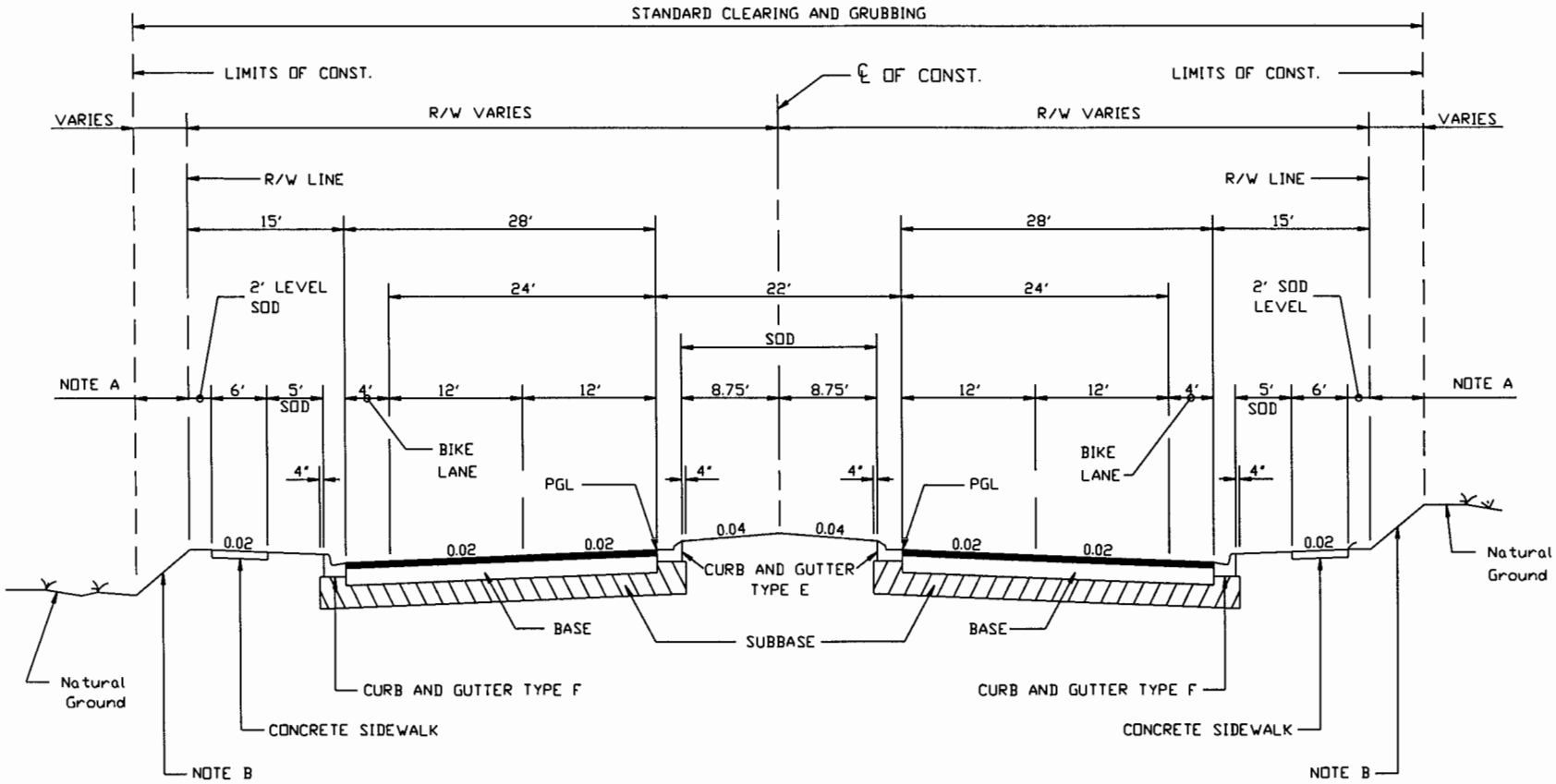
# NEW CONSTRUCTION WITH DESIGNATED OR UNDESIGNATED BIKE LANE




## TYPICAL SECTION

NTS

SEE DWG. NO. 6, SHEET 2 OF 2, FOR DRAWING NOTES.

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| BROWARD COUNTY<br>HIGHWAY CONSTRUCTION<br>AND ENGINEERING DIVISION | 4 - LANE<br>ARTERIAL<br>DIVIDED URBAN | Approved by: DJH<br>Revised: 6/01/05 WRH | 3<br>DWG. NO. |

A 3

City of Fort Lauderdale
Bid 12204-293
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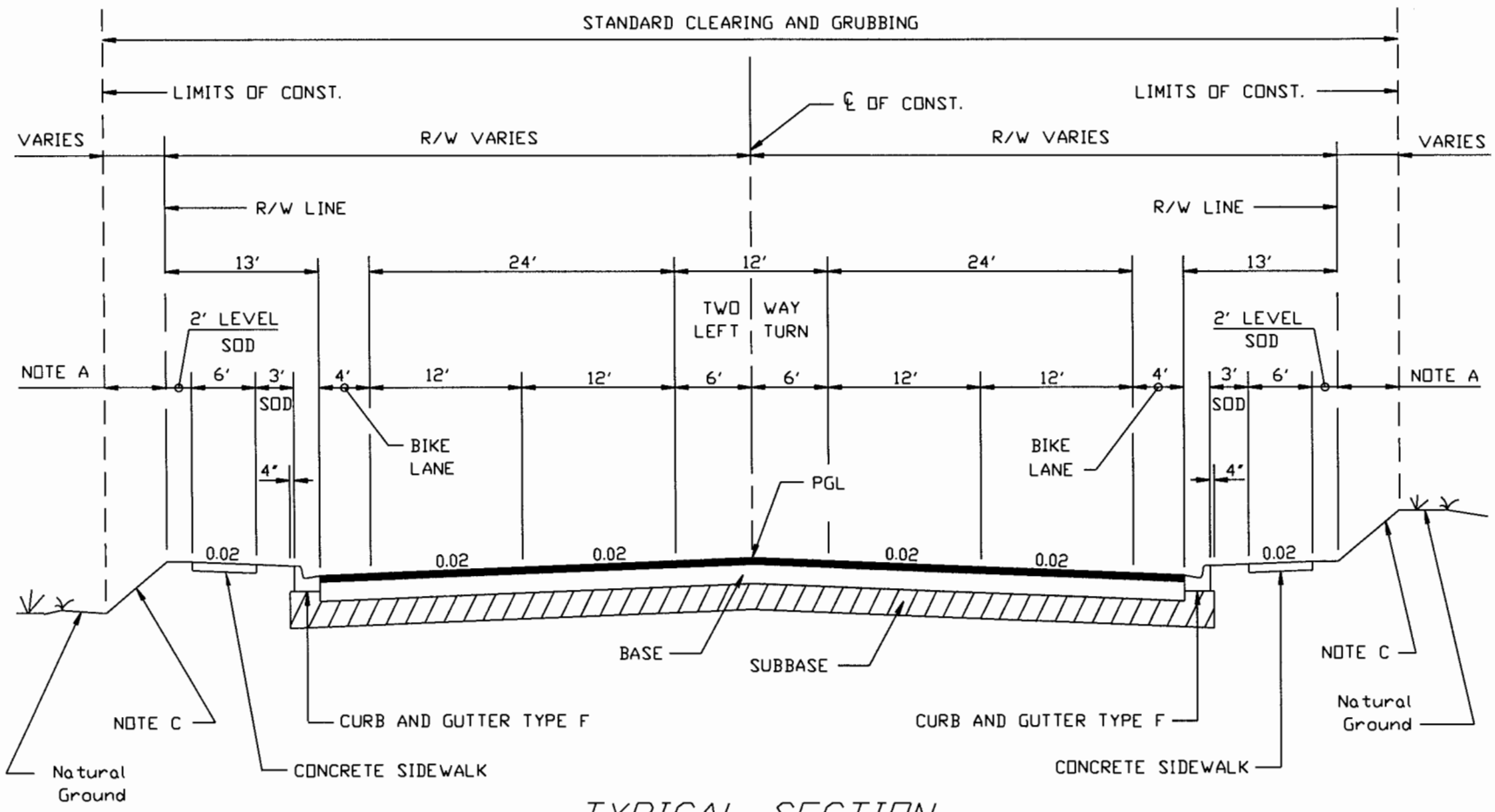
## NEW CONSTRUCTION WITH DESIGNATED OR UNDESIGNATED BIKE LANE




*TYPICAL SECTION*

NTS

SEE DWG. NO. 6, SHEET 2 OF 2, FOR DRAWING NOTES.

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|---|---|---|---|
| BROWARD COUNTY<br>HIGHWAY CONSTRUCTION<br>AND ENGINEERING DIVISION | 5 - LANE<br>ARTERIAL / COLLECTOR<br>UNDIVIDED URBAN | Approved by: DJH<br>Revised: 6/01/05 WRH | 4<br>DWG. NO. |

A 4

City of Fort Lauderdale
Bid 12204-293
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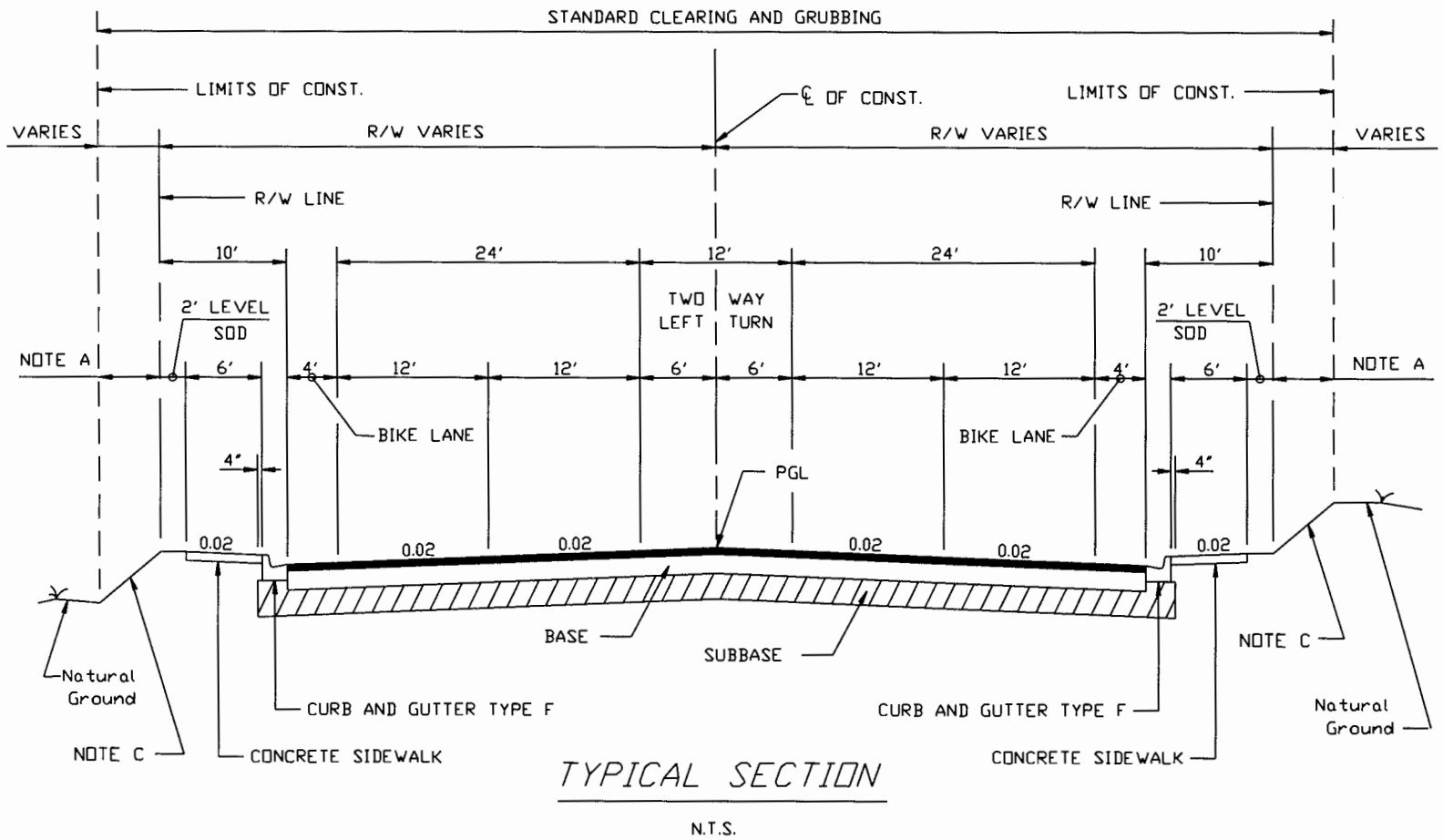
# NEW CONSTRUCTION WITH DESIGNATED OR UNDESIGNATED BIKE LANE




*TYPICAL SECTION*

N.T.S.

SEE DWG. NO. 6, SHEET 2 OF 2, FOR DRAWING NOTES.

| | | | |
|---|---|---|---|
| BROWARD COUNTY<br>HIGHWAY CONSTRUCTION<br>AND ENGINEERING DIVISION | 5 - LANE<br>ARTERIAL / COLLECTOR<br>UNDIVIDED URBAN | Approved by: DJH<br>Revised: 6/10/05 WRH | 5<br>DWG. NO. |



City of Fort Lauderdale
Bid 12204-293
CAM 19-0760
Exhibit 5
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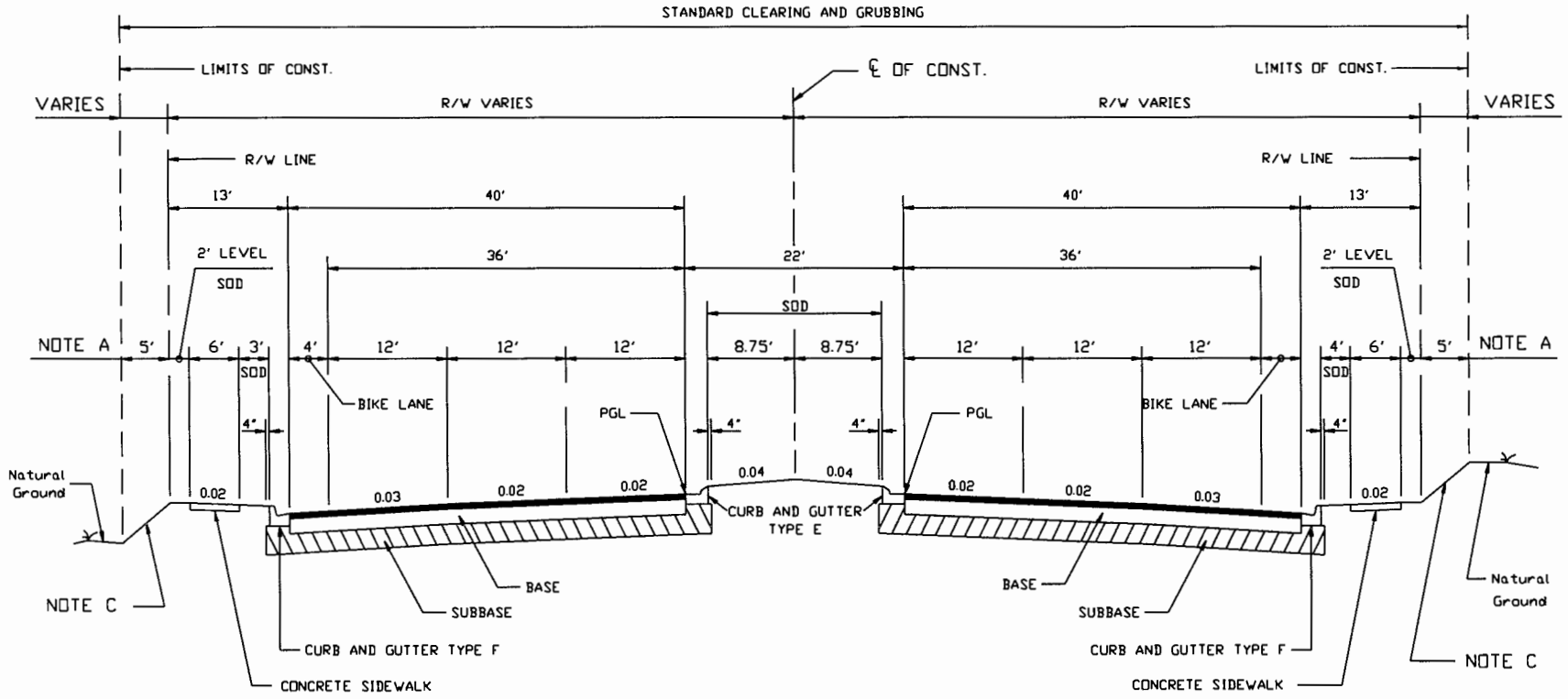
# NEW CONSTRUCTION WITH DESIGNATED OR UNDESIGNATED BIKE LANE




*TYPICAL SECTION*

NTS

SEE DWG. NO. 6, SHEET 2 OF 2, FOR DRAWING NOTES.

| | | | |
|---|---|---|---|
| BROWARD COUNTY<br>HIGHWAY CONSTRUCTION<br>AND ENGINEERING DIVISION | 6 - LANE<br>ARTERIAL<br>DIVIDED URBAN | Approved by: DJH<br>Revised: 6/10/05 WRH | 6<br>DWG. NO. |

SHEET 1 OF 2

A 6 a

City of Fort Lauderdale
Bid 12204-293
CAM 19-0760
Exhibit 5
Page 483 of 549

# DRAWING NOTES FOR NEW CONSTRUCTION - TYPICAL SECTIONS

For submittal of a new roadway or new through lanes, the applicant shall submit sketches of the proposed typical right-of-way sections and pavement design to the Highway Construction and Engineering Division for approval prior to beginning the preparation of plans. Proposed typical right-of-way cross sections shall follow the format and general provisions shown in Drawings 1 through 6. The Highway Construction and Engineering Division may require submittal of a traffic study that evaluates the anticipated traffic volume and the capacity of the new roadway based on Florida Department of Transportation standards.

The typical sections shall show or note all applicable design elements outlined in the "Green Book." Where determination of the "ultimate through lane" is necessary, it will be made in this review.

A typical section shall be shown on all plans. For submittal of a new roadway or new through lanes, the applicant shall submit sketches of the proposed typical right-of-way sections to the Highway Construction and Engineering Division for approval prior to beginning the preparation of plans. Proposed typical right-of-way cross sections shall follow the provisions outlined in Sec. 5-192(c) (2) of the Broward County Land Development Code. The Highway Construction and Engineering Division may require submittal of a traffic study that evaluates the anticipated traffic volume & the capacity of the new roadway based on Florida Department of Transportation standards. The typical sections shall show or note all of the applicable design elements outlined in the "Green Book". Where determination of the "ultimate through lane" is necessary, it shall be made in this review.

Note A: Seed and mulch slopes up to 1:3. Sod slopes steeper than 1:3.

Note B: A slope of 1:6 shall be used to the edge of clear zone.
For fills from 0 to 5 feet a slope of 1:6 shall be used.
For fills to from 5 to 10 feet a slope of 1:4 shall be used.
For fills to from 10 to 20 feet a slope of 1:3 shall be used.
For fills over 20 feet a slope of 1:2 shall be used and guardrail must be provided.

Note C: Slope shall be 1:2 or to suit property owner. It shall not be flatter than 1:6.

Note D: There shall be a minimum separation of two feet between the limits of clearing and grubbing and the area disturbed by construction.

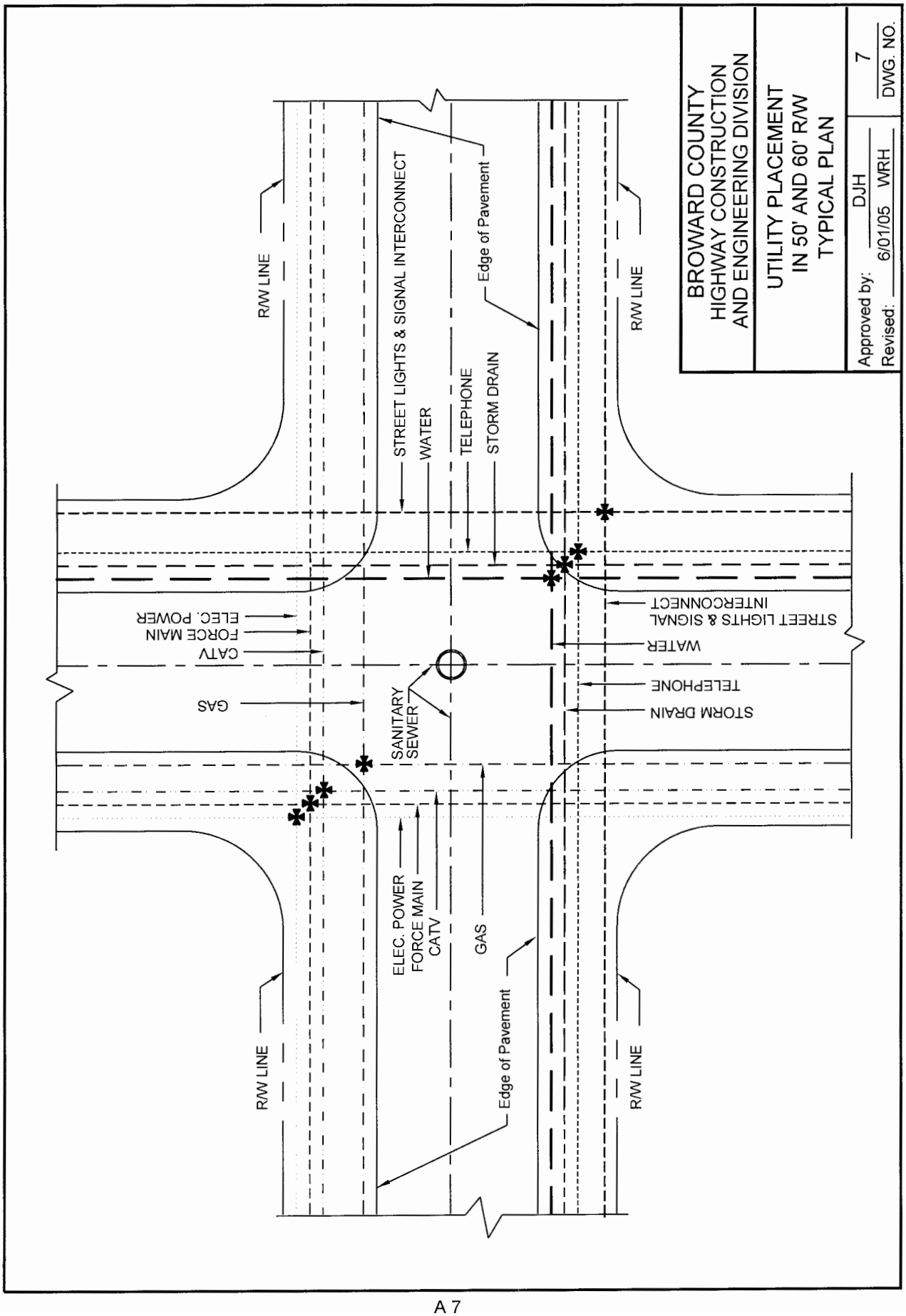
Bike Lanes: Designated bike lanes must be labeled on typical sections, undesignated bike lanes must not be labeled on typical sections.

Pavement Design for Roadways:
The final lift (friction course) shall be type S-III asphaltic concrete. The structural course shall have a minimum thickness of 1-1/4 ". The proposed base and subbases shall conform to FDOT standards. The structural number for pavement (includes subbase, base, structural course and friction course) shall meet or exceed SN 3.84.

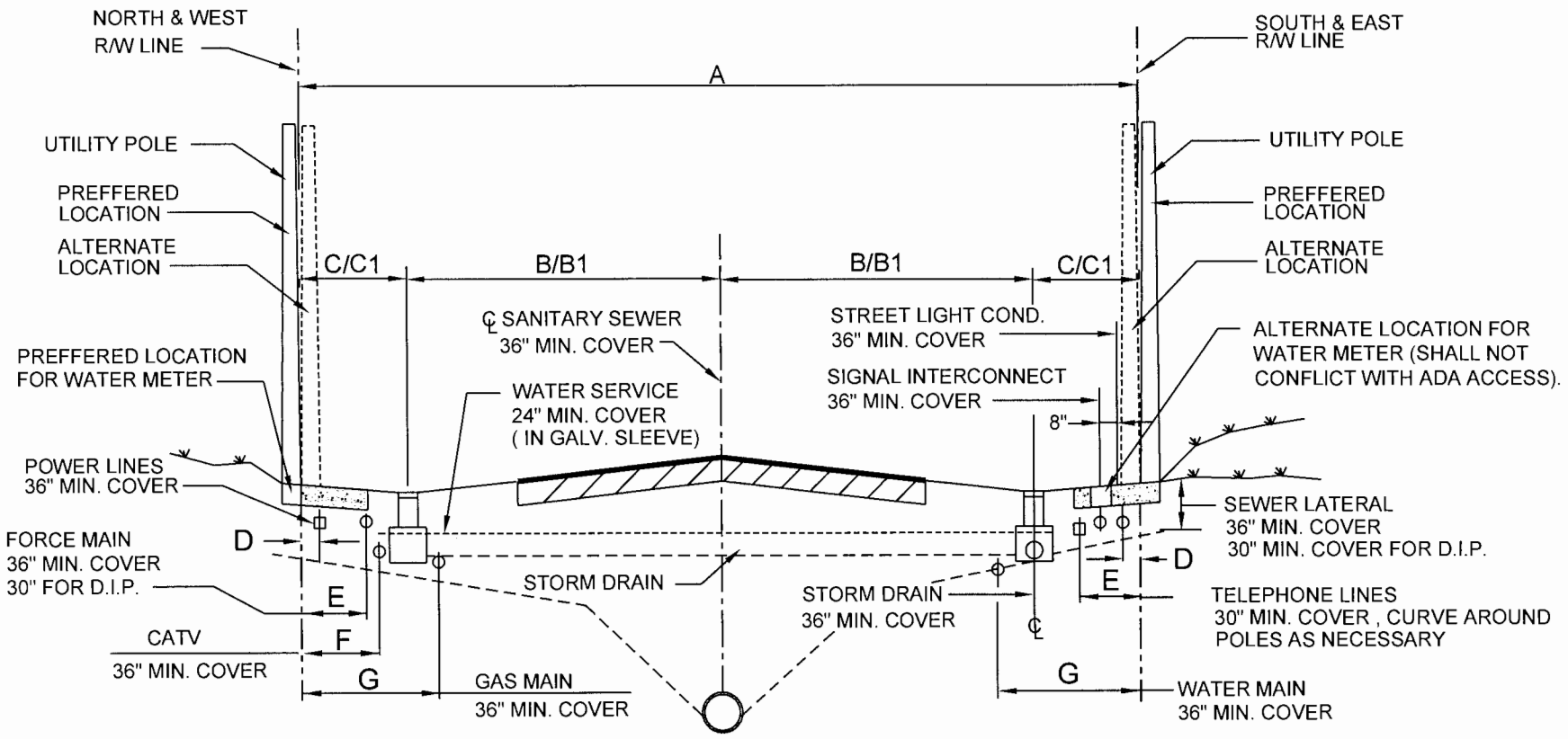
Pavement Design for Shoulders:
The final lift shall be type S-III asphaltic concrete . The proposed base and subbases shall conform to FDOT standards. The structural number for shoulder pavement shall meet or exceed SN 2.84.

Such proposals shall be submitted to the Highway Construction and Engineering Division, whose approval shall be obtained before the proposed design may be incorporated into the project. Meeting the above requirements shall not constitute approval.

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| DRAWING NOTES NEW CONSTRUCTION TYPICAL SECTIONS | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 6<br>Dwg. No. |


BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
UTILITY PLACEMENT
IN 50' AND 60' R/W
TYPICAL PLAN
Approved by: DJH
Revised: 6/01/05 WRH
7
DWG. NO.
R/W LINE
STREET LIGHTS & SIGNAL INTERCONNECT
WATER
TELEPHONE
STORM DRAIN
Edge of Pavement
ELEC. POWER
FORCE MAIN
CATV
GAS
SANITARY SEWER

A 7




| A | B | C | D | E | F | G | B1 | C1 |
|---|---|---|---|---|---|---|---|---|
| 50' | 17' | 8' | 1.5' | 5' | 6' | 10.5' | 17' | 9' |
| 60' | 19' | 11' | 1.5' | 5' | 6' | 14' | 21' | 9' |

NOTES:

1. Use B1 & C1 in lieu of B & C for R/W without sidewalks and without positive drainage.
2. An alternate utility pole location shall only be used if no utility easement is available, and shall be approved by the Broward County Highway Construction and Engineering Division. In such instances the sidewalk design, and placement of all utility lids, junction boxes, etc., shall meet all ADA requirements.
2. Use of the table shall not supercede utility conflict or separation requiremenrs of other governing agencies

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

UTILITY PLACEMENT
IN 50' AND 60' R/W
TYPICAL SECTION

Approved by: DJH
Revised: 6/01/05 WRH

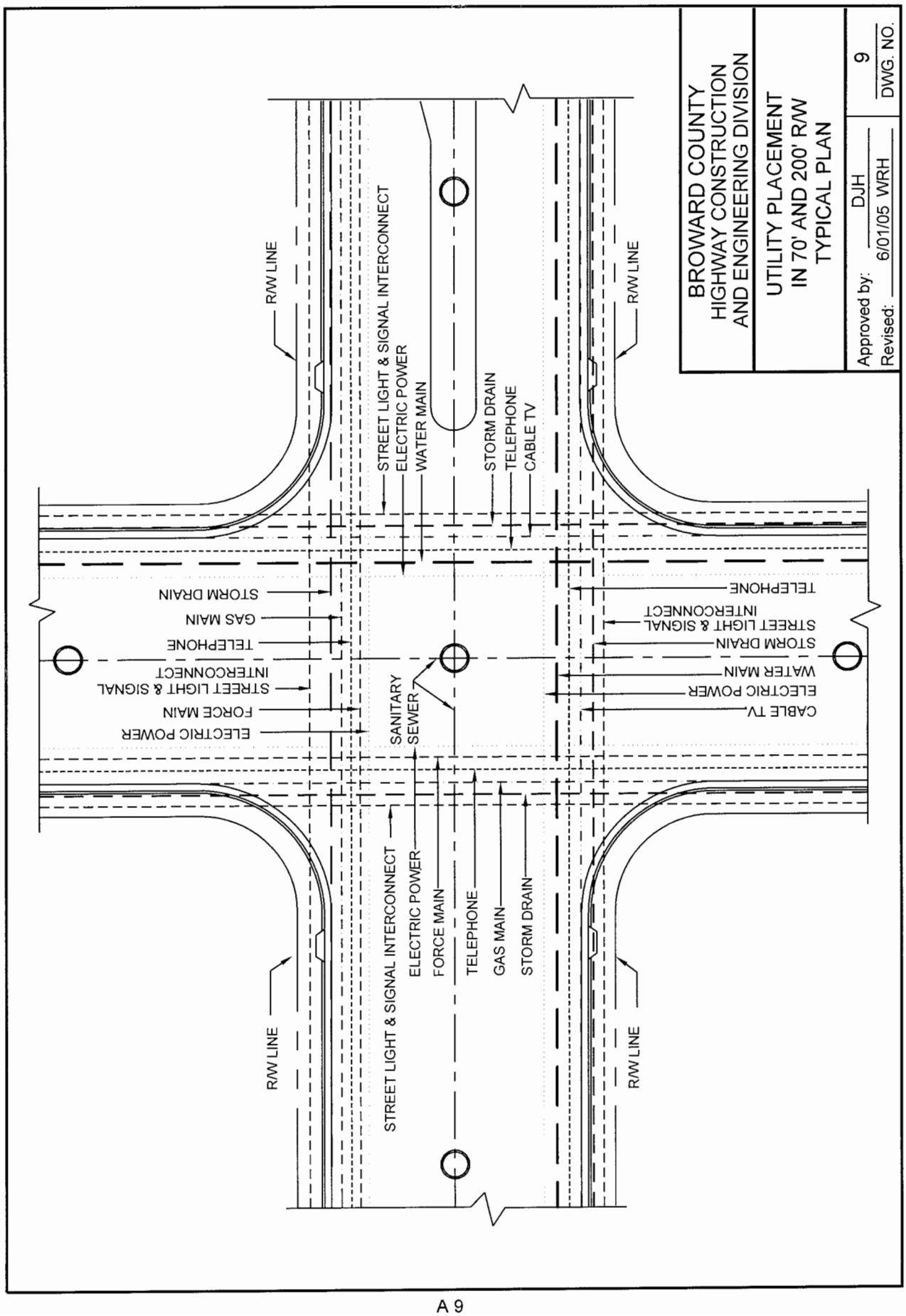
8
DWG. NO.

A 8

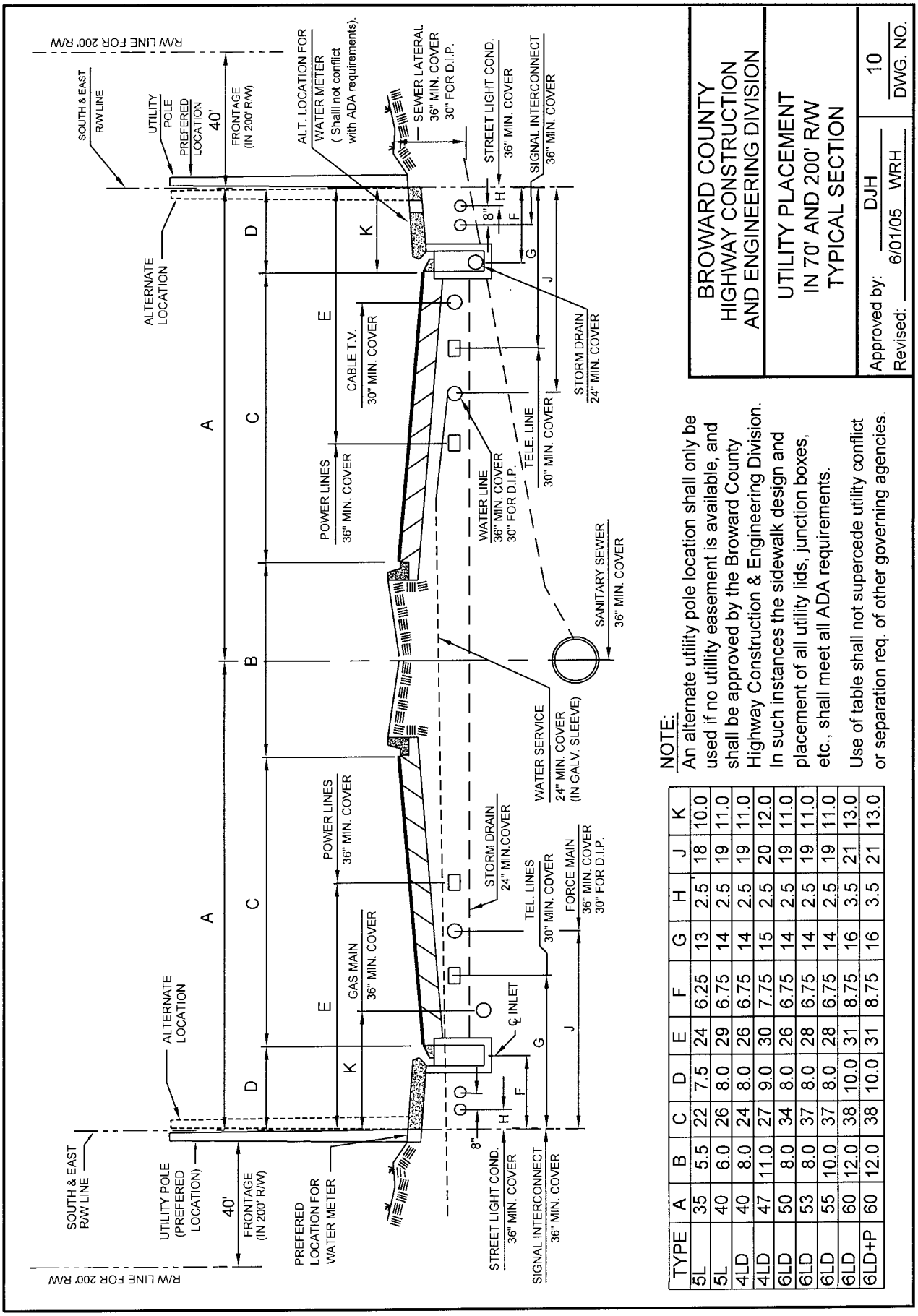


City of Fort Lauderdale

Bid 12204-293


BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
UTILITY PLACEMENT
IN 70' AND 200' R/W
TYPICAL PLAN
Approved by: DJH
Revised: 6/01/05 WRH
9
DWG. NO.
R/W LINE
STREET LIGHT & SIGNAL INTERCONNECT
ELECTRIC POWER
WATER MAIN
STORM DRAIN
TELEPHONE
CABLE TV
STORM DRAIN
GAS MAIN
TELEPHONE
STREET LIGHT & SIGNAL INTERCONNECT
FORCE MAIN
ELECTRIC POWER
SANITARY SEWER
TELEPHONE
STREET LIGHT & SIGNAL INTERCONNECT
STORM DRAIN
WATER MAIN
ELECTRIC POWER
CABLE TV
STREET LIGHT & SIGNAL INTERCONNECT
ELECTRIC POWER
FORCE MAIN
TELEPHONE
GAS MAIN
STORM DRAIN
R/W LINE
R/W LINE
R/W LINE
R/W LINE

A 9




| TYPE | A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|
| 5L | 35 | 5.5 | 22 | 7.5 | 24 | 6.25 | 13 | 2.5 | 18 | 10.0 |
| 5L | 40 | 6.0 | 26 | 8.0 | 29 | 6.75 | 14 | 2.5 | 19 | 11.0 |
| 4LD | 40 | 8.0 | 24 | 8.0 | 26 | 6.75 | 14 | 2.5 | 19 | 11.0 |
| 4LD | 47 | 11.0 | 27 | 9.0 | 30 | 7.75 | 15 | 2.5 | 20 | 12.0 |
| 6LD | 50 | 8.0 | 34 | 8.0 | 26 | 6.75 | 14 | 2.5 | 19 | 11.0 |
| 6LD | 53 | 8.0 | 37 | 8.0 | 28 | 6.75 | 14 | 2.5 | 19 | 11.0 |
| 6LD | 55 | 10.0 | 37 | 8.0 | 28 | 6.75 | 14 | 2.5 | 19 | 11.0 |
| 6LD | 60 | 12.0 | 38 | 10.0 | 31 | 8.75 | 16 | 3.5 | 21 | 13.0 |
| 6LD+P | 60 | 12.0 | 38 | 10.0 | 31 | 8.75 | 16 | 3.5 | 21 | 13.0 |

NOTE:
An alternate utility pole location shall only be used if no utillity easement is available, and shall be approved by the Broward County Highway Construction & Engineering Division. In such instances the sidewalk design and placement of all utility lids, junction boxes, etc., shall meet all ADA requirements.

Use of table shall not supercede utility conflict or separation req. of other governing agencies.

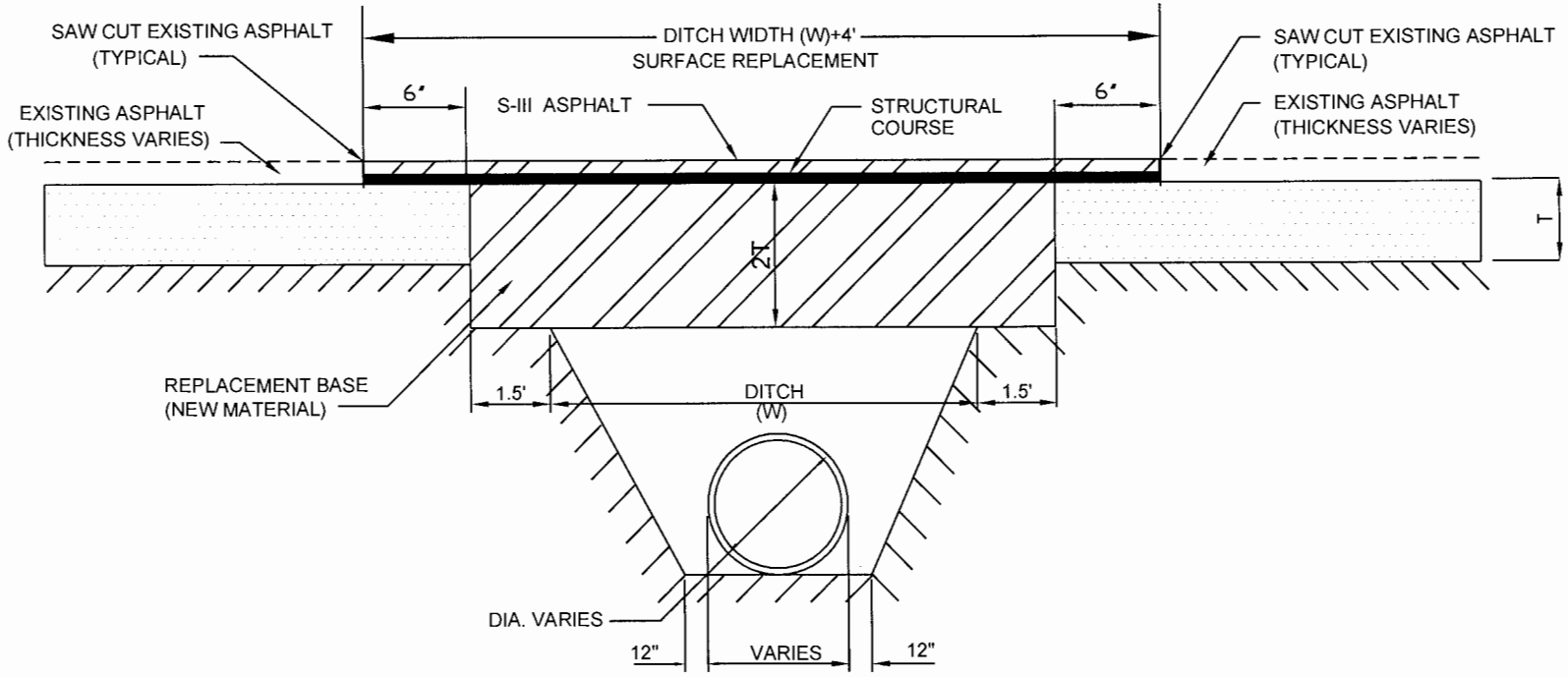
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

UTILITY PLACEMENT
IN 70' AND 200' R/W
TYPICAL SECTION

Approved by: DJH
Revised: 6/01/05 WRH

DWG. NO. 10

A 10




TYPICAL SECTION

GENERAL NOTES:

1. BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL.
2. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM LAYERS (LOOSE MEASUREMENT) AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
4. SURFACE MATERIAL SHALL BE CONSISTENT WITH THE SURROUNDING SURFACE MATERIAL.
5. BASE MATERIAL SHALL HAVE A MIN. CARBONATE OF 70% (60% FOR LOCAL STREETS).
6. SUB GRADE MATERIAL SHALL BE GRANULAR AND ANGULAR AND SHALL HAVE A MINIMUM LBR OF 40.
7. IF THE DITCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" THICK ASPHALT CONCRETE PATCH TO KEEP THE FILL MATERIAL FROM RAVELING, UNTIL REPLACED WITH A PERMANENT PATCH.

NOTE: THIS DETAIL APPLIES TO ALL INSTALLATIONS THAT REQUIRE AN AN OPEN CUT IN PAVEMENT.

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

# RESTORATION OF FLEXIBLE PAVEMENT CROSSING USING LIMEROCK BASE

Approved by: DJH
Revised: 6/01/05 WRH

11
DWG. NO.

SHEET 1 OF 2

A 11a



City of Fort Lauderdale

## ADDITIONAL NOTES FOR RESTORATION OF FLEXIBLE PAVEMENT:

The procedure for backfill and pavement restoration is as follows:

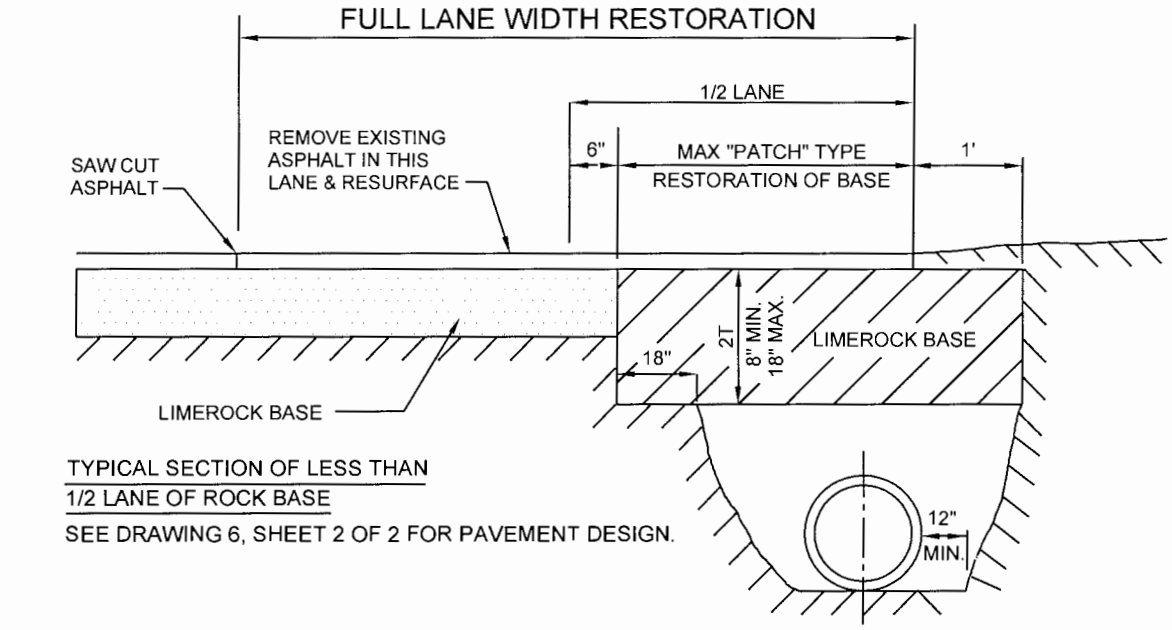
Density tests shall be taken at 6" lift of base rock and each 8" lift of compacted fill or backfill according to the following schedule, prior to placement of the succeeding lifts:

1. For any road crossing in which the road is cut and restored one lane at a time, one density test shall be taken in each lane at each lift.
2. For any road crossing in which the road is cut and restored two lanes at a time, density shall be tested in one lane per lift, alternating lanes with each lift.
3. For any road crossing in which the road is cut and restored three lanes at a time, density shall be tested in two locations per lift, staggering locations with each sucessive lift.
4. Cuts in roads shall not be left open over-night unless specific permission has been obtained from the Highway Construction and Engineering Division. Trenches shall be back filled & temporary asphalt applied to make a smooth level patch. The trench shall then be excavated the next day & permanent backfill & pavement installed in accordance with these standards. The only exceptions shall be in cases where the facility installed must be tested before the roads are restored. In these cases, the permanent restoration must be performed on the day of testing or the next day.
5. In cases where the installation parallels the roadway and damages the pavement, the density tests shall be made every 100' at each lift, with test locations staggered 25' for each lift.
6. Roadway base material shall be compacted to a maximum of 98% of maximum dry density, as determined by AASHTO T-180 (Modified Proctor Test). Subgrade material under paved areas shall be compacted to a minimum of 100% of maximum dry density as per AASHTO T-99C. Shoulder areas and swales beyond shoulders shall be compacted to a minimum of 95% dry density, all as determined by AASHTO T-99-C (Standard Proctor Test).
7. Restoration of striping, signing and signalization devices shall be accomplished immediately after pavement restoration is completed, as approved by the Traffic Engineering Division.

A copy of all Proctor and Field Tests shall be furnished to the Highway Construction and Engineering Division upon request.

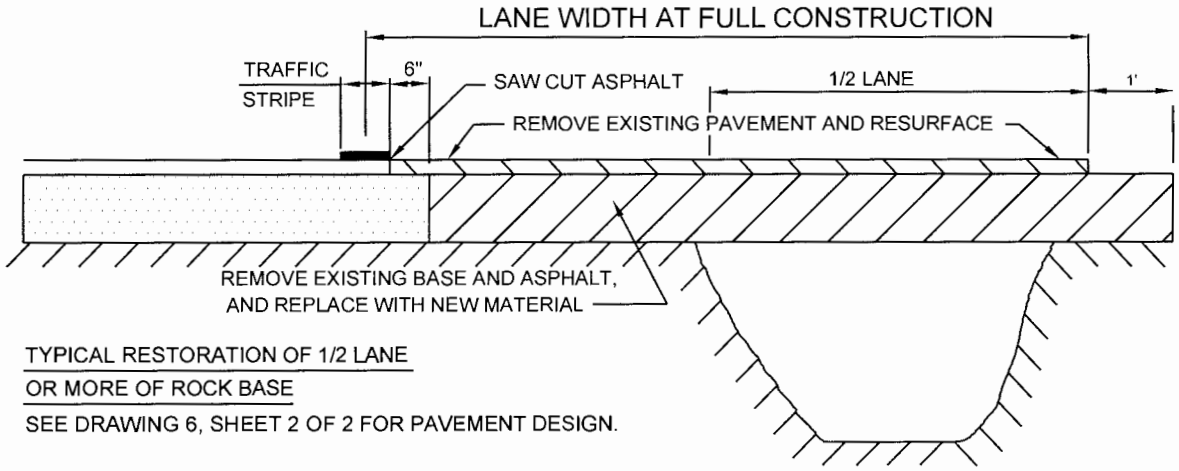
NOTE: The above represents the minimum procedure. Inspectors may require additional testing if, in their opinion conditions or prior test results warrant them.

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| RESTORATION OF FLEXIBLE PAVEMENT CROSSING USING LIMEROCK BASE | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 11<br>Dwg. No. |




TYPICAL SECTION OF LESS THAN 1/2 LANE OF ROCK BASE

SEE DRAWING 6, SHEET 2 OF 2 FOR PAVEMENT DESIGN.




TYPICAL RESTORATION OF 1/2 LANE OR MORE OF ROCK BASE

SEE DRAWING 6, SHEET 2 OF 2 FOR PAVEMENT DESIGN.

## RESTORATION OF FLEXIBLE PAVEMENT - LONGITUDINAL CUTS

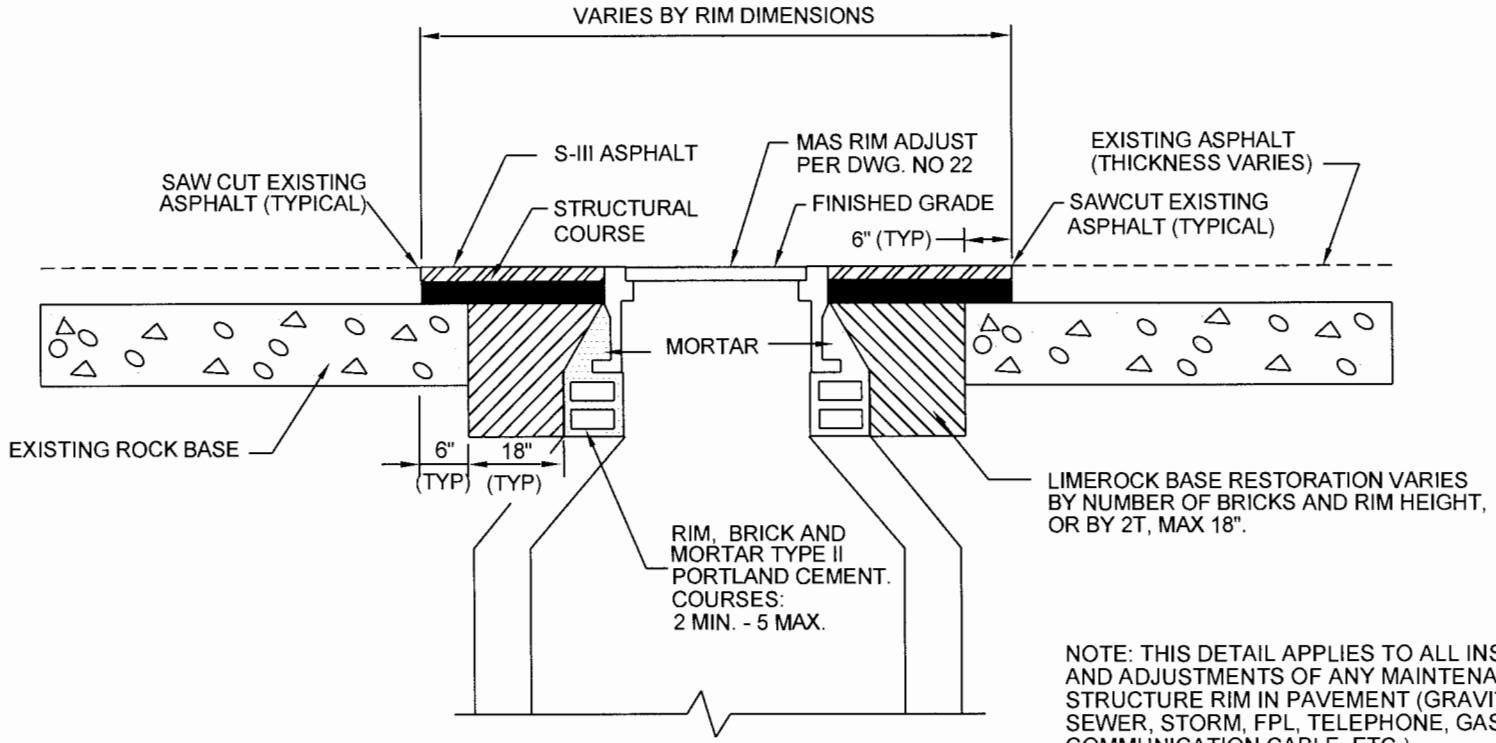
(THIS DRAWING IS TO BE WORKED WITH DRAWING NO.11)

NOTES:

1. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 AND A MINIMUM CARBONATE CONTENT OF 70% (60% FOR LOCAL STREETS).
2. BASE SHALL BE PLACED IN 6" MAXIMUM THICKNESS LAYERS WITH EACH LAYER COMPACTED AS REQUIRED AND TESTED PRIOR TO THE PLACEMENT OF THE SUCCEEDING LAYER.
3. SUB GRADE MATERIAL SHALL BE GRANULAR AND ANGULAR AND SHALL HAVE A MINIMUM LBR OF 40.
4. BACKFILL SHALL BE PLACED AND COMPACTED IN 8" LAYERS, BUT TESTING WILL BEGIN 12" ABOVE THE INSTALLED FACILITY.
5. ALL EDGES OF EXISTING ASPHALT PAVEMENT THAT SHALL ABUT RESURFACING SHALL BE SAW CUT IN STRAIGHT LINES PARALLEL TO OR PERPENDICULAR TO THE ROADWAY, PRIOR TO RESURFACING.
6. RESURFACING MATERIAL SHALL BE CONSISTENT WITH SURROUNDING SURFACE, AND SHALL BE APPLIED A MINIMUM OF 3/4" AND A MAXIMUM OF 2" IN THICKNESS.
7. TRAFFIC STRIPS SHALL NOT BE PLACED DIRECTLY ON TOP OF THE JOINT.

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| RESTORATION OF FLEXIBLE PAVEMENT LONGITUDINAL CUTS USING LIMEROCK BASE | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 12<br>DWG. NO. |

A 12




TYPICAL SECTION

NOTE: THIS DETAIL APPLIES TO ALL INSTALLATIONS AND ADJUSTMENTS OF ANY MAINTENANCE ACCESS STRUCTURE RIM IN PAVEMENT (GRAVITY SEWER, SEWER, STORM, FPL, TELEPHONE, GAS COMMUNICATION CABLE, ETC.)

GRADE RINGS MAY BE USED IN LIEU OF BRICKS WITH APPROVAL BY THE HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION.

GENERAL NOTES

1. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM (LOOSE MEASURMENT) LAYERS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180
2. ASPHALT PAVEMENT PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
3. SURFACE MATERIAL SHALL BE CONSISTENT WITH THE SURROUNDING SURFACE MATERIAL.
4. BASE MATERIAL SHALL HAVE A MINIMUM CARBONATE OF 70% (60% FOR LOCAL STREETS).
5. UNDER NO CIRCUMSTANCES SHALL ASPHALT REPAIR BE LESS THAN THE THICKNESS OF THE EXISTING PAVEMENT.

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

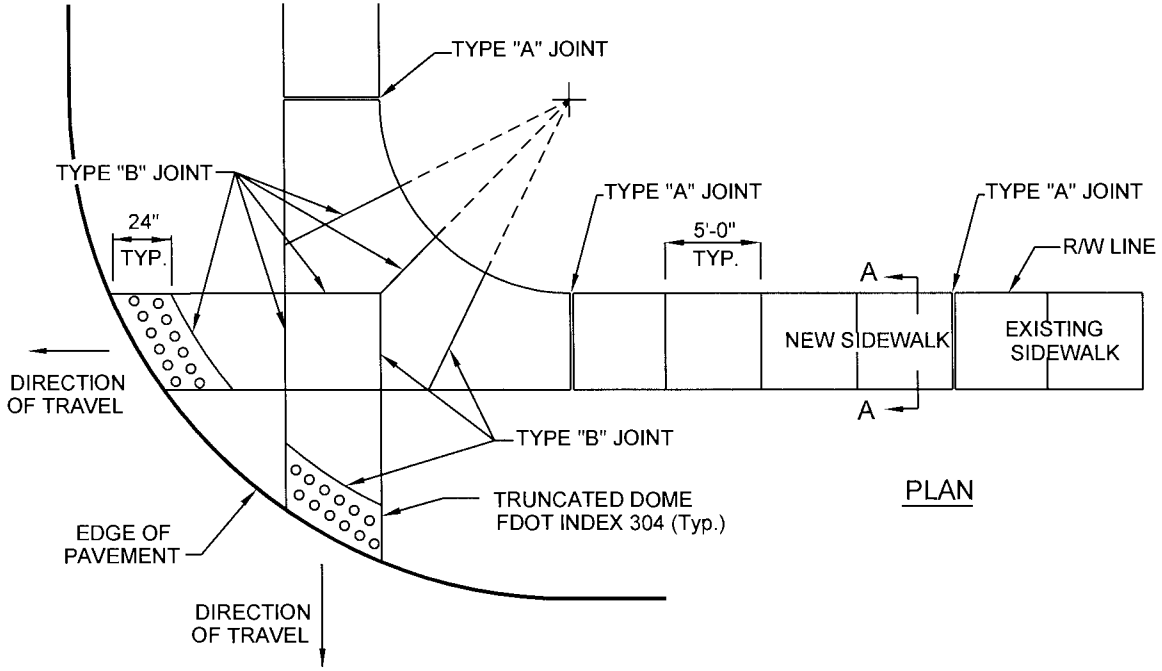
# RESTORATION OF FLEXIBLE PAVEMENT - LIMEROCK BASE

(AT MAINTENANCE ACCESS STRUCTURE)

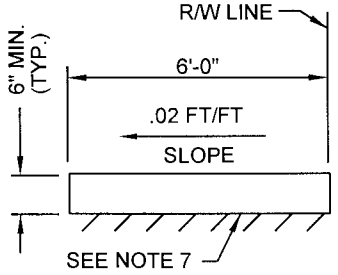
| | |
|---|---|
| Approved by: DJH | 13 |
| Revised: 6/01/05 WRH | DWG. NO. |

A 13

City of Fort Lauderdale
Bid 12204-293
CAM 19-0760
Exhibit 5
Page 492 of 549



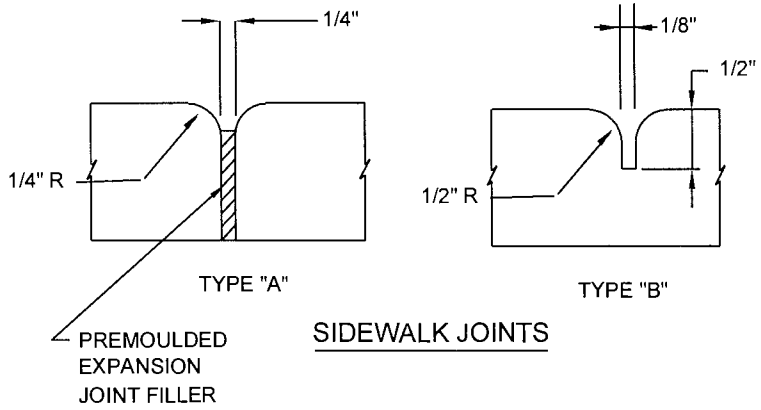

PLAN




SECTION A-A

NOTES:

1. CONCRETE TO BE CLASS 1, 3000 P.S.I.
2. THE USE OF REINFORCEMENT IS NOT PERMITTED.
3. SIDEWALK SLOPES SHALL MEET THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT.
4. RAMPS SHALL BE PROVIDED AT ALL INTERSECTIONS IN ACCORDANCE WITH FDOT INDEX 304.
5. THE VERTICAL DEVIATION FOR A NEW SIDEWALK SHALL NOT BE MORE THAN 1/2".
6. THE VERTICAL DEVIATION FOR A NEW MAINTENANCE ACCESS STRUCTURE COVER SHALL NOT BE MORE THAN 1/4".
7. SUBGRADE MATERIAL SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY, PER AASHTO T-99.
8. STAMPED CONCRETE IS NOT ALLOWED IN LIEU OF TRUNCATED DOMES.
9. SEE HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION APPROVED PRODUCT LIST FOR ACCEPTABLE MATERIALS FOR TRUNCATED DOMES.




SIDEWALK JOINTS

| TABLE OF SIDEWALK JOINTS | |
|---|---|
| TYPE | LOCATION |
| "A" | P.C. P.T. OF CURVES & WHERE SIDEWALK ABUTS CONCRETE DRIVEWAY. |
| "B" | 5'-0" CENTER TO CENTER ON SIDEWALKS. |

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

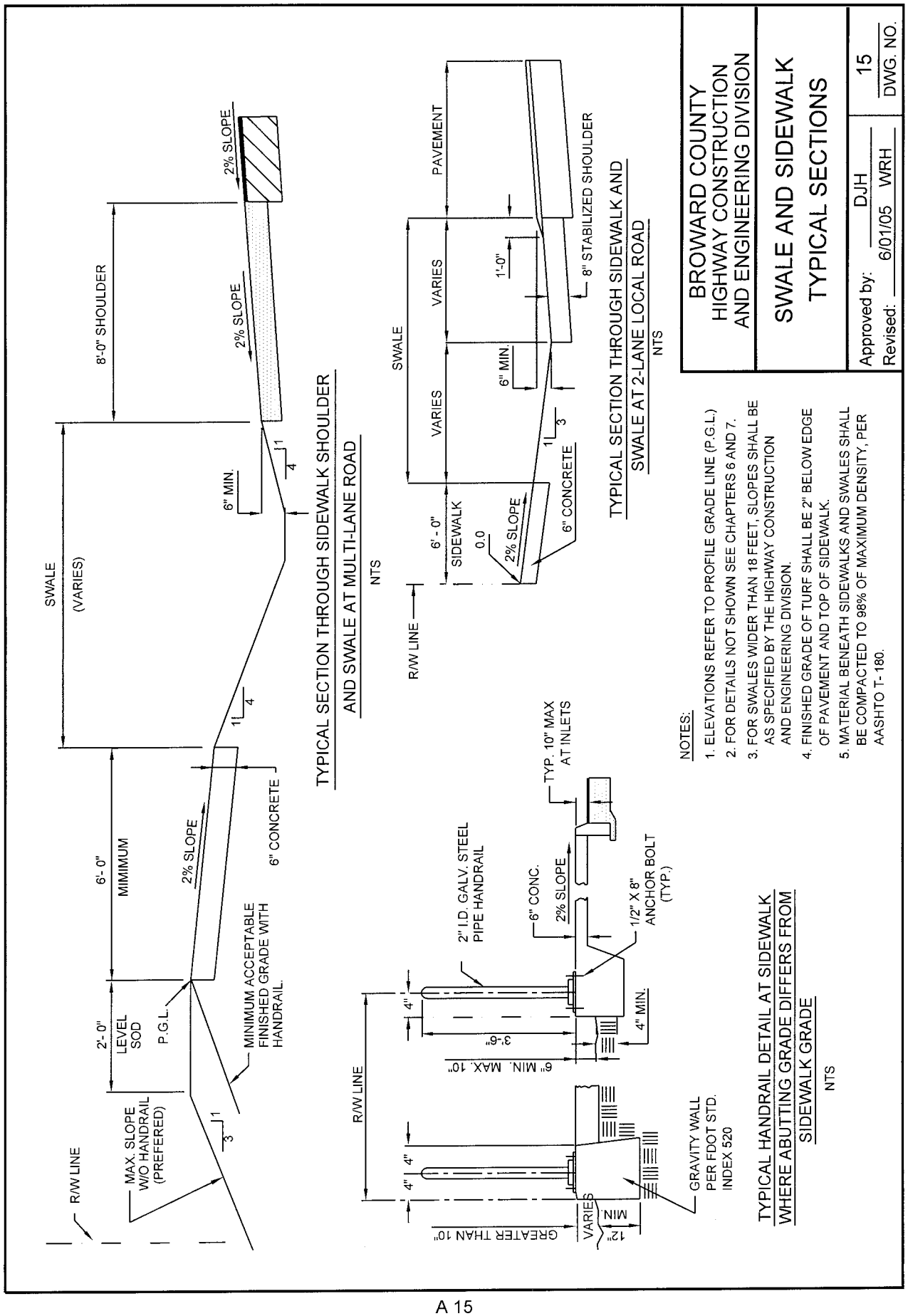
# SIDEWALK
# TYPICAL DETAILS

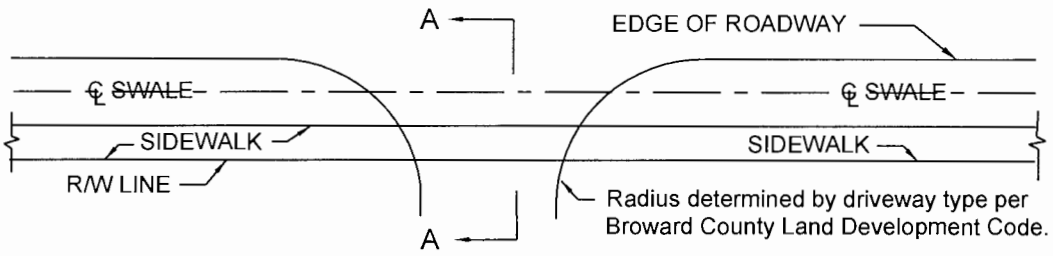
Approved by: DJH
Revised: 6/01/05 WRH

14
DWG. NO.

A 14

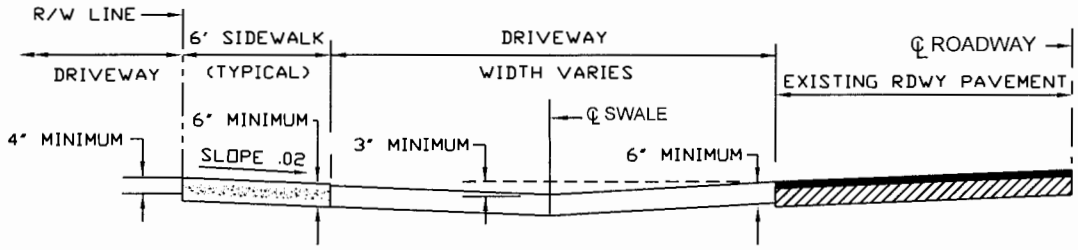
City of Fort Lauderdale
Bid 12204-293
CAM 19-0760
Exhibit 5
Page 493 of 549


TYPICAL SECTION THROUGH SIDEWALK SHOULDER AND SWALE AT MULTI-LANE ROAD
NTS
R/W LINE
MAX. SLOPE W/O HANDRAIL (PREFERED)
LEVEL SOD
2'- 0"
P.G.L.
6'- 0" MIMIMUM
2% SLOPE
MINIMUM ACCEPTABLE FINISHED GRADE WITH HANDRAIL.
6" CONCRETE
SWALE (VARIES)
6" MIN.
8'-0" SHOULDER
2% SLOPE
2% SLOPE
TYPICAL SECTION THROUGH SIDEWALK AND SWALE AT 2-LANE LOCAL ROAD
NTS
R/W LINE
6' - 0" SIDEWALK
0.0
2% SLOPE
6" CONCRETE
SWALE
VARIES
VARIES
PAVEMENT
6" MIN.
1'-0"
8" STABILIZED SHOULDER
TYPICAL HANDRAIL DETAIL AT SIDEWALK WHERE ABUTTING GRADE DIFFERS FROM SIDEWALK GRADE
NTS
R/W LINE
4"
4"
GREATER THAN 10"
VARIES
12" MIN
GRAVITY WALL PER FDOT STD. INDEX 520
2" I.D. GALV. STEEL PIPE HANDRAIL
6" CONC.
2% SLOPE
TYP. 10" MAX AT INLETS
1/2" X 8" ANCHOR BOLT (TYP.)
4" MIN.
3'-6"
6" MIN. MAX. 10"
NOTES:
1. ELEVATIONS REFER TO PROFILE GRADE LINE (P.G.L.)
2. FOR DETAILS NOT SHOWN SEE CHAPTERS 6 AND 7.
3. FOR SWALES WIDER THAN 18 FEET, SLOPES SHALL BE AS SPECIFIED BY THE HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION.
4. FINISHED GRADE OF TURF SHALL BE 2" BELOW EDGE OF PAVEMENT AND TOP OF SIDEWALK.
5. MATERIAL BENEATH SIDEWALKS AND SWALES SHALL BE COMPACTED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
SWALE AND SIDEWALK
TYPICAL SECTIONS
Approved by: DJH
Revised: 6/01/05 WRH
15
DWG. NO.



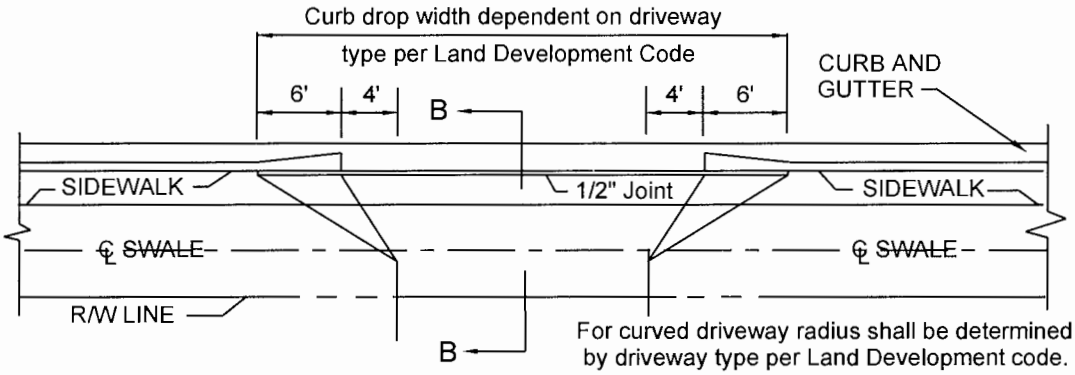

PLAN – DRIVEWAY WITH SIDEWALK SETBACK FROM UNCURBED ROADWAY

NTS



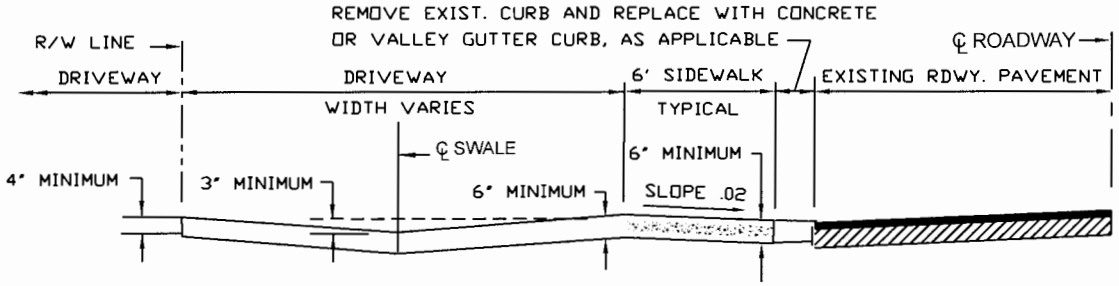

SECTION A–A

NTS




PLAN – DRIVEWAY WITH SIDEWALK ADJACENT TO CURBED ROADWAY

NTS




SECTION B–B

NTS

NOTES:

1. SIDEWALK AND DRIVEWAY ON STREET SIDE OF R/W LINE SHALL BE 6" MINIMUM CONCRETE (3000 PSI), WITH NO REINFORCEMENT.
2. MATERIAL BENEATH SIDEWALKS AND SWALES SHALL BE COMPACTED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

DRIVEWAY, SWALE &
SIDEWALK - DETAILS

Approved by: DJH
Revised: 6/01/05 WRH

16
DWG. NO.

A 16

## DESIGN CACULATIONS

EXAMPLE:
REQUIREMENTS: DESIGN FOR ONE INCH OF RUNOFF FOR EACH SQUARE FOOT OF DRAINAGE AREA. PROVIDE STORAGE FOR 100% OF THE RUNOFF.

LENGTH PAVED = 40'
LENGTH OF PAVEMENT ALLOWED = 30% OF 100 ft. = 30 ft.

DRAINAGE TO BE PROVIDED FOR:
30 ft. x 40 ft. = 1200 sq. ft.
1200 ft. x 0.08 = 96 cu. ft.

### CALCULATION FOR DESIGN OF SYSTEM

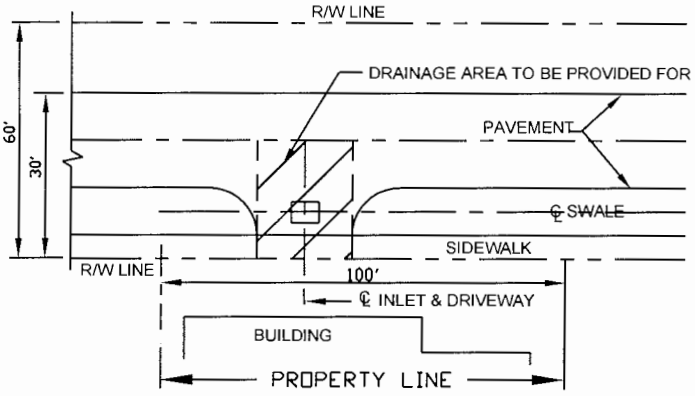
1. VOLUME OF TYPE "C" CATCH BASIN
   2.10 x 2.79 x 3.5 =
   VOL. = 20.56 cu. ft.
2. AREA OF 12" PIPE
   $A=\pi \times R^2$
   $A=3.14 \times (0.5)^2$
   A=0.8 sq. ft.
3. STORAGE AREA OF DRAINFIELD
   50% OF (3 'x 3-0.8)
   A=4.1 sq. ft.
4. REQD. DRAINFIELD & PIPE STORAGE VOLUME (VR)
   VR = TOT. REQD. VOL.
   VR = 96 cu. ft. -20.56 cu. ft.
5. LENGTH OF DRAINFIELD

$$L = \frac{VR}{A_{DF} \times A_P} = \frac{75.44 \text{ cu ft}}{(4.1+0.8) \text{ sq ft}}$$

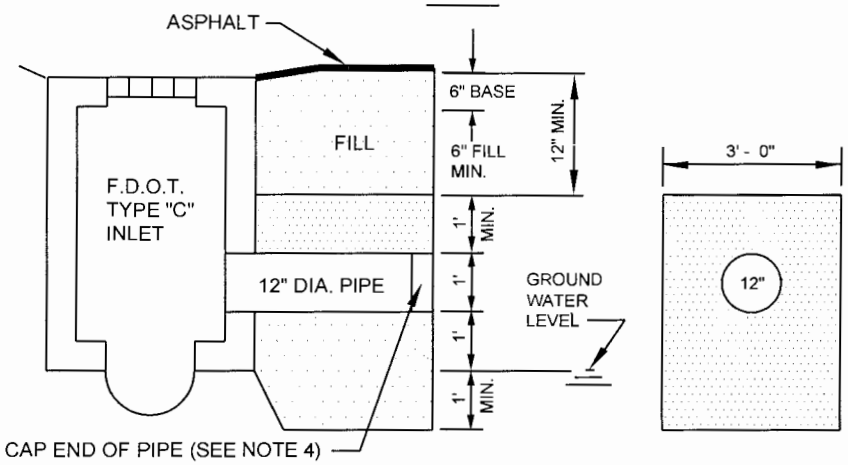
$$L = \frac{75.44}{4.9} = 15.44'$$

USE 16'

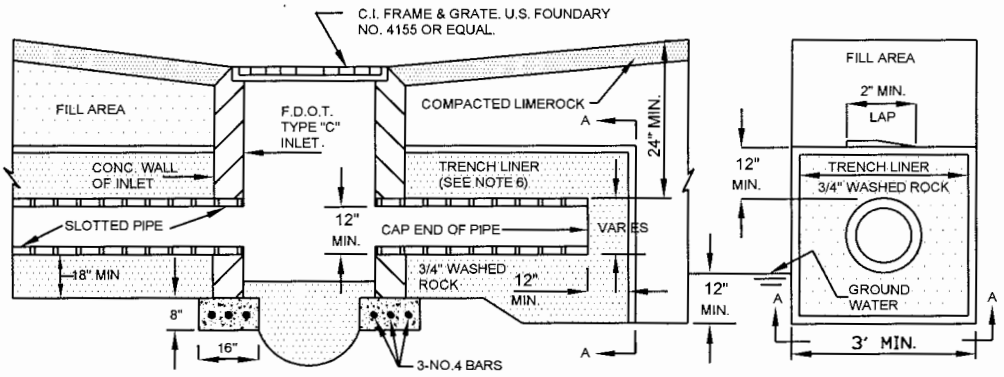
NOTE: DRAINFIELD MAY BE ON ONE SIDE OF THE CATCH BASIN OR BE DIVIDED ON TWO SIDES.




PLAN




TYPICAL SECTION




INSTALLATION DETAILS - TYPICAL SECTION

NOTES:
1. CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH, MINIMUM.
2. PIPE SHALL BE 12" SLOTTED CONC. MEETING A.S.T.M. STDS. OTHER TYPES OF DRAIN PIPE REQ. HIGHWAY CONSTRUCTION & ENGINEERING DIVISION APPROVAL.
3. PIPES SHALL TERMINATE WITH SCREEN OR SHALL CONNECT TO ADDITIONAL CATCH BASINS AS REQUIRED.
4. COVER PIPE ENDS WITH NO. 10 GALVANIZED OR ALUMINUM SCREEN, WITH OPENINGS NO LARGER THAN 1/2" x 1/2".
5. BALLAST ROCK SHALL BE FROM FRESH WATER AND WASHED FREE OF DELETERIOUS MATERIAL.
6. SIDES, ENDS, AND TOP OF ROCK SHALL BE COVERED WITH APPROVED FILTER FABRIC LAPPED 2' MIN. AT LOCATIONS WHERE TWO OR MORE PIECES MEET. OVERLAPS AT SIDE OF TRENCH SHALL BE AVOIDED.

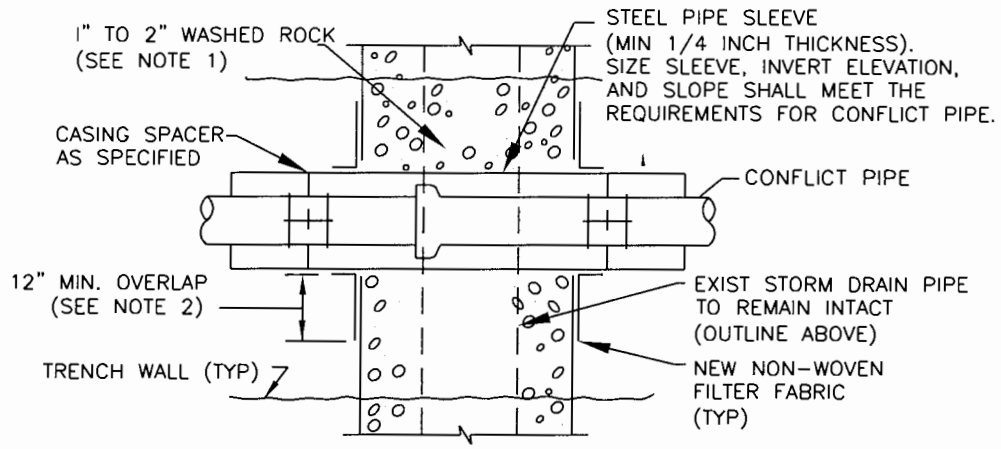
BROWARD COUNTY
HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION

DRAINAGE REQUIRMENTS WHEN PAVING OVER 30% OF SWALE

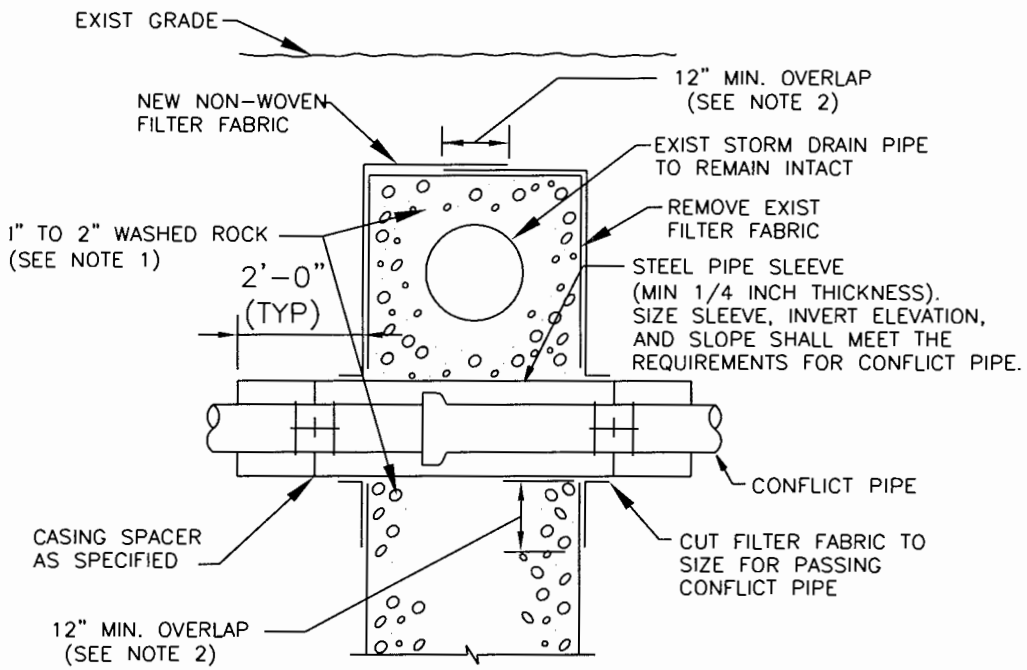
Approved by: DJH
Revised: 6/01/05 WRH

17
DWG. NO.

A 17




PLAN

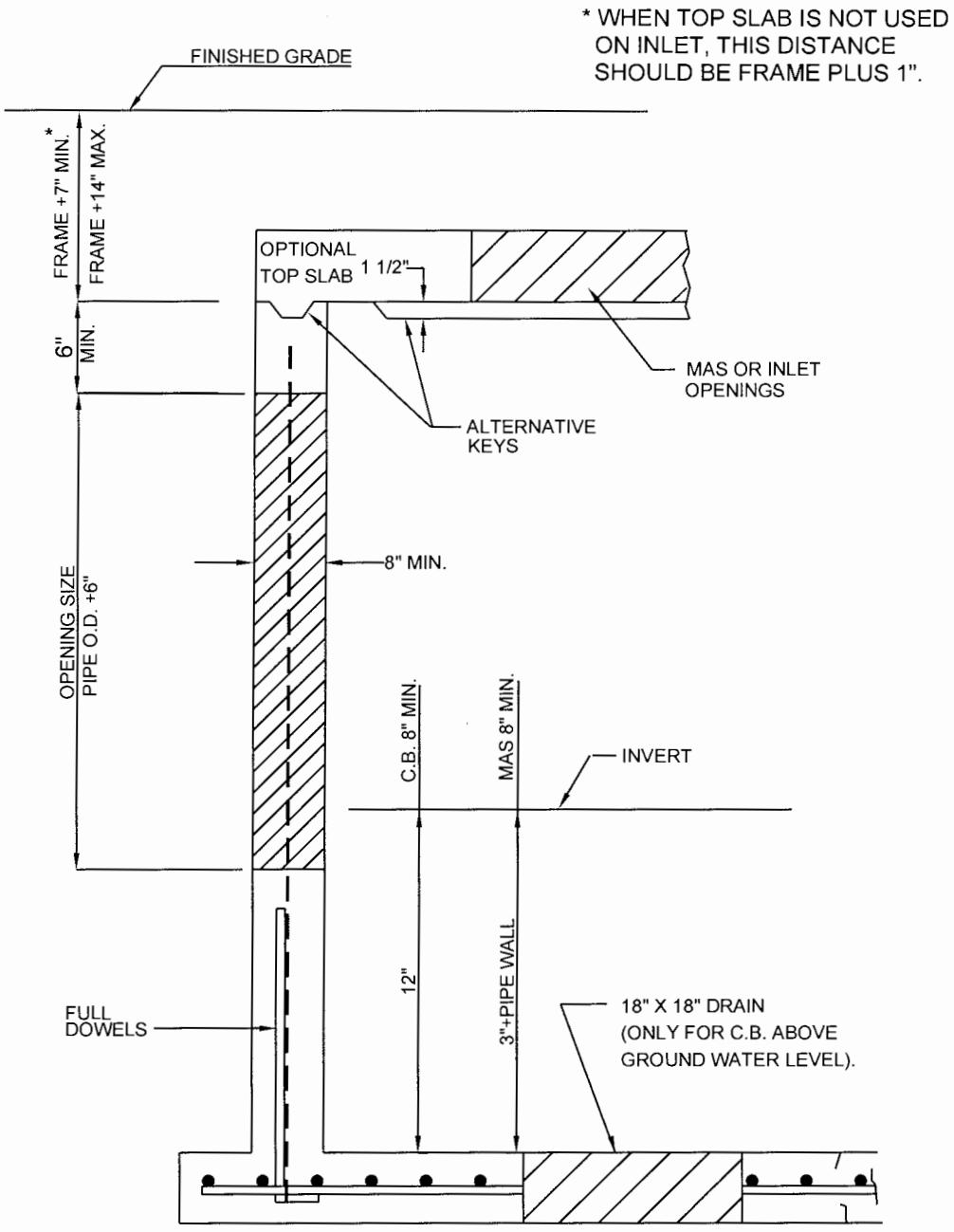



SECTION

NOTES:

1. EQUIVALENT STONE SHALL REPLACE DISTURBED ROCK (1" TO 2" WASHED ROCK).
2. THE RESTORATION OF THE EXISTING TRENCH SHALL OVERLAP THE CUT WITH NEW NON-WOVEN FILTER FABRIC AND EXTEND BEYOND THE CUT BY 1 FOOT.
3. BOTTOM OF CUT SHALL ALSO BE REPAIRED WITH OVERLAPPING FABRIC.
4. INTRODUCTION OF SAND AND SOIL INTO THE EXPOSED FRENCH DRAIN ROCK SHALL BE AVOIDED.
5. SOIL SURROUNDING THE TRENCH SHALL BE COMPACTED IN 6" LIFTS, OR PER TRENCH RESTORATION DETAIL.
6. STAINLESS STEEL BANDING SHALL BE USED TO SECURE THE FILTER FABRIC TO THE SLEEVE.

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| EXFILTRATION TRENCH AND CONFLICT PIPE DETAIL | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 18<br>DWG. NO. |




NOTES:

1. ALL DRAINAGE STRUCTURES SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF ASTM STANDARD NO. C-478 AND CHAPTER 6, SECTION 6-1.13.3 OF THIS DOCUMENT.
2. CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 4000 P.S.I. IN 28 DAYS.
3. ROCK AND/OR FILTER FABRIC SHALL BE PLACED UNDER ALL DRAINAGE STRUCTURES AS DIRECTED BY THE HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION.

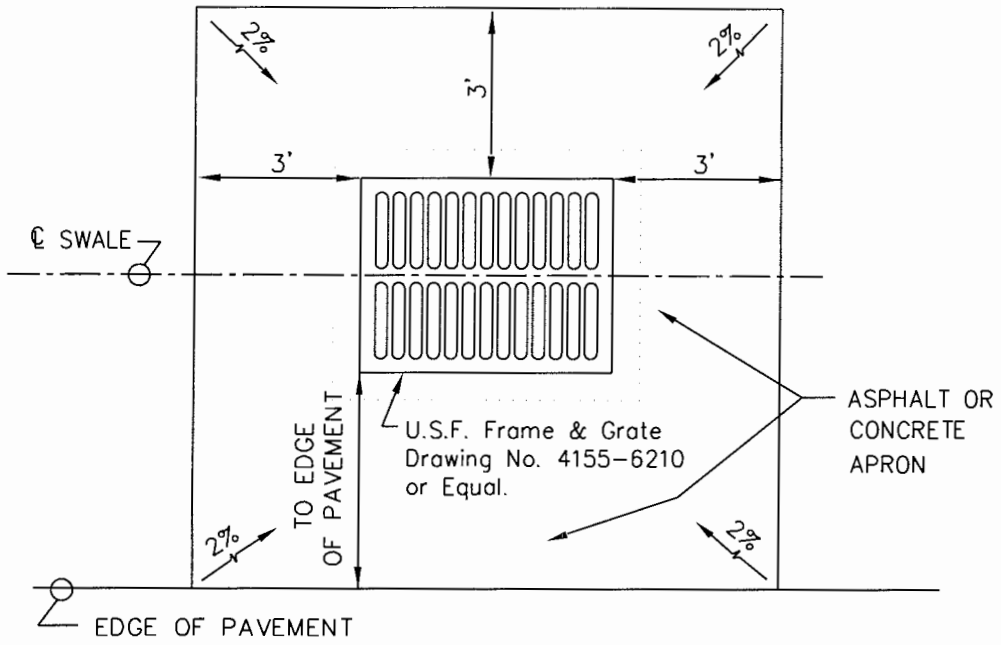
BROWARD COUNTY
HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION

TYPICAL DRAINAGE STRUCTURE DETAILS

Approved by: DJH
Revised: 6/01/05 WRH

19
DWG. NO.

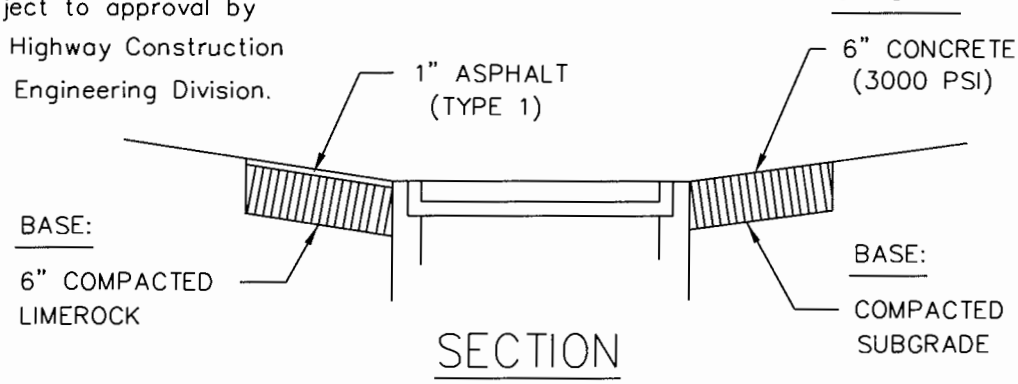
A 19




PLAN

OPTION 1:

Subject to approval by the Highway Construction and Engineering Division.




SECTION

# CATCH BASIN SWALE INSTALLATION WITH APRON

N.T.S.

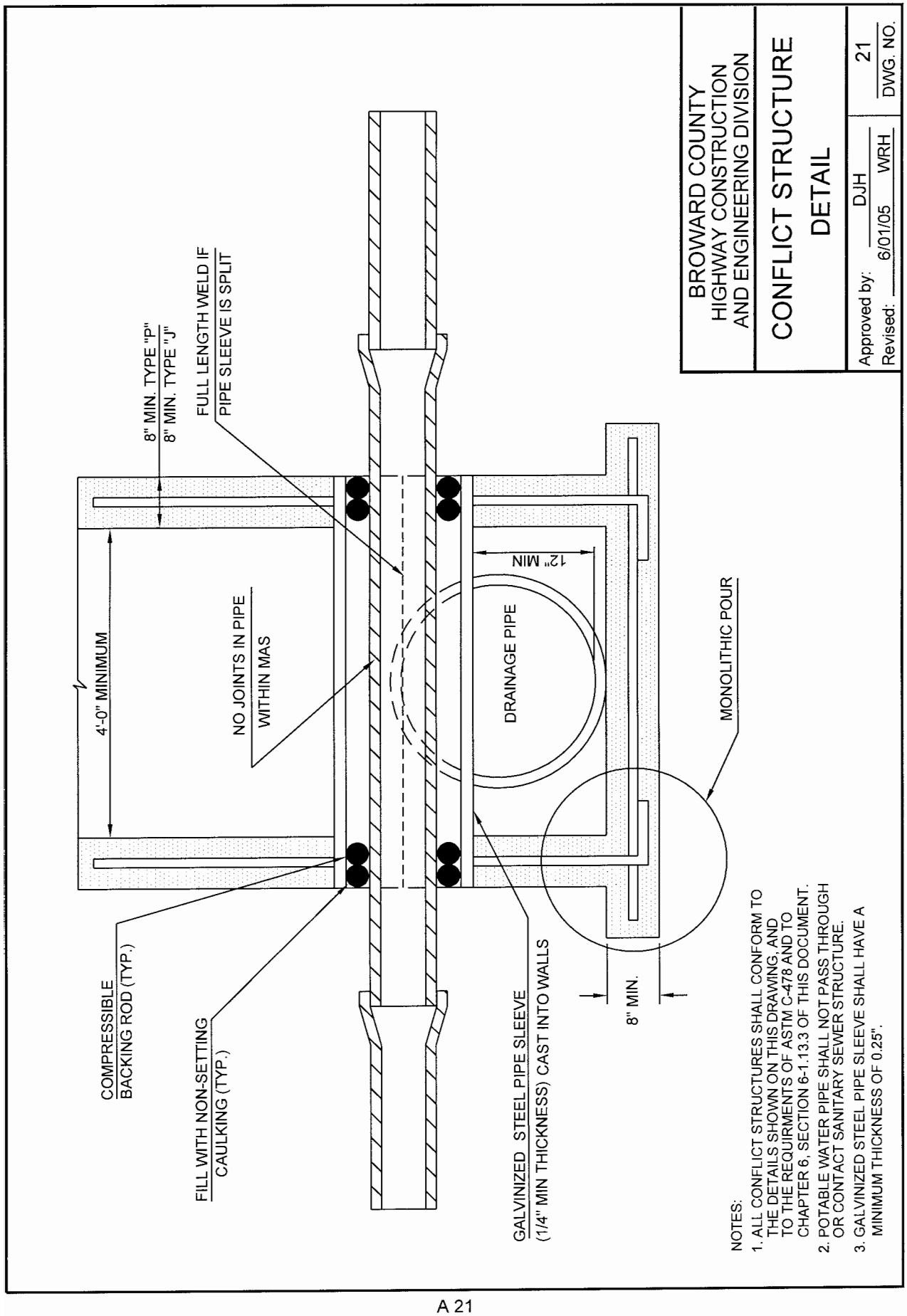
NOTES:

COMPACTED LIMEROCK BASE SHALL MEET 98% MAXIMUM DRY DENSITY PER AASHTO T-180.

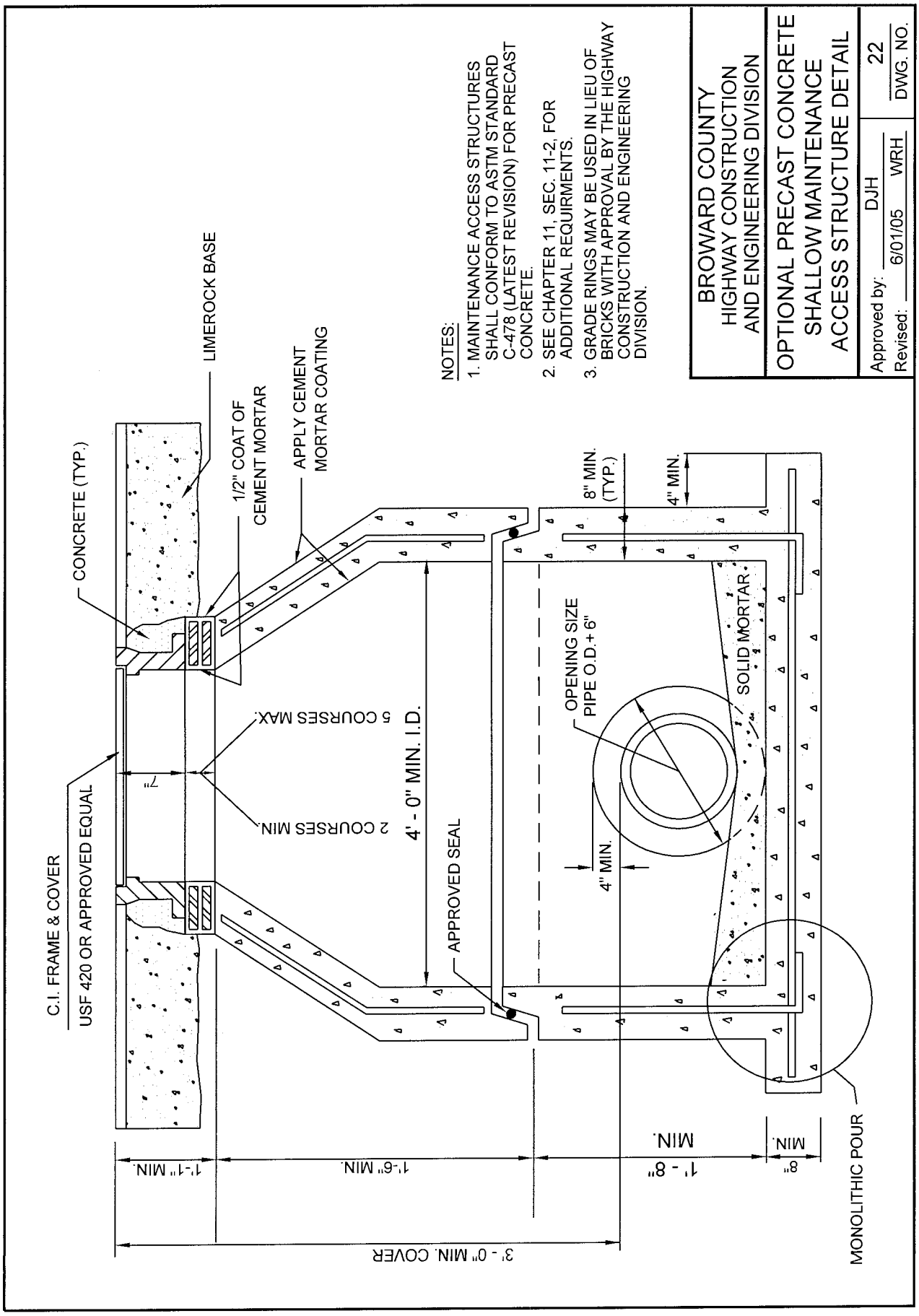
SUBGRADE BENEATH CONCRETE SHALL MEET 100% MAXIMUM DRY DENSITY PER AASHTO T-180.

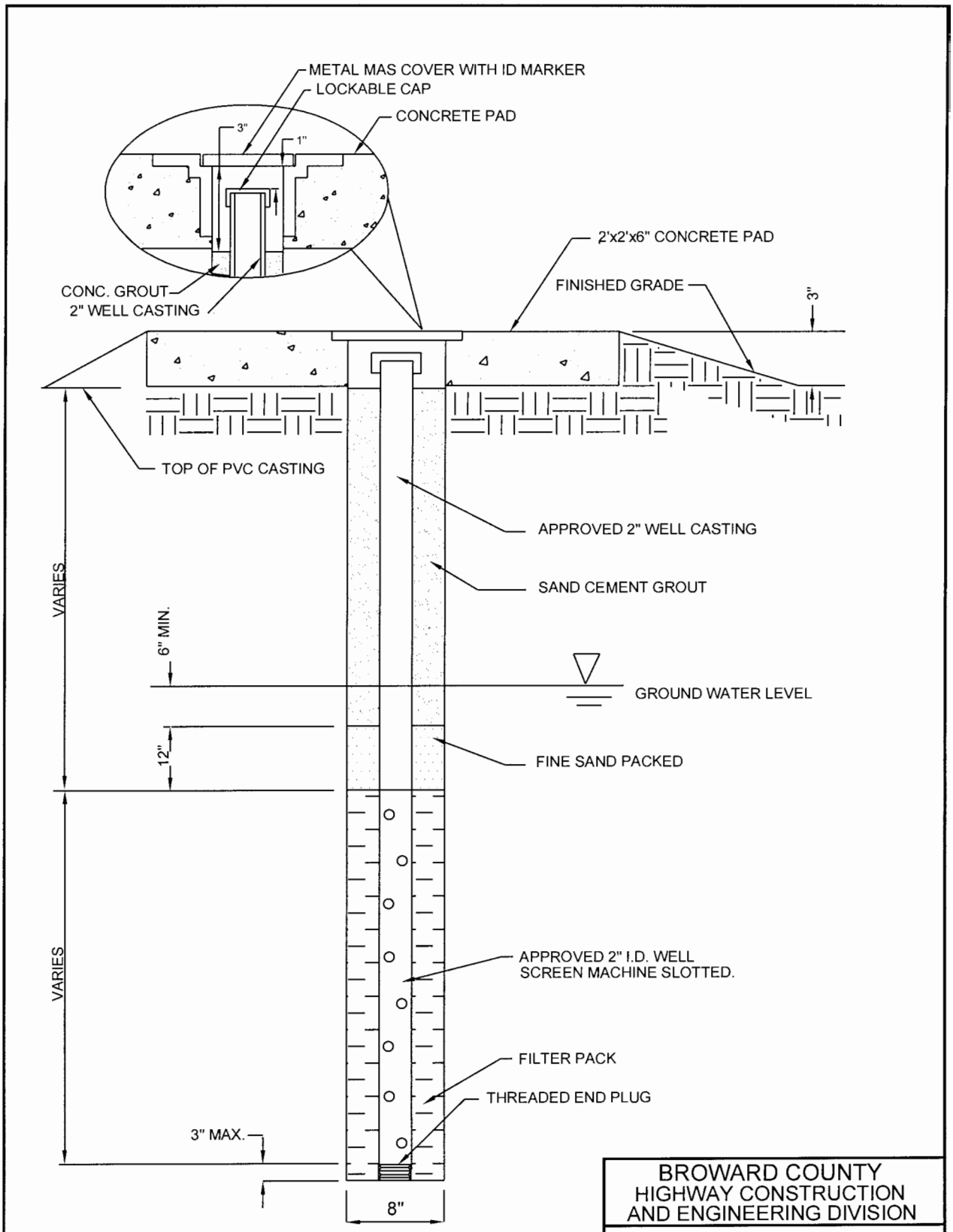
APRON TO BE 3' MINIMUM ON THREE SIDES, WITH FOURTH SIDE EXTENDED TO EDGE OF PAVEMENT.

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| CATCH BASIN APRON | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 20<br>DWG. NO. |


BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
CONFLICT STRUCTURE
DETAIL
Approved by: DJH
Revised: 6/01/05 WRH
21
DWG. NO.
8" MIN. TYPE "P"
8" MIN. TYPE "J"
FULL LENGTH WELD IF
PIPE SLEEVE IS SPLIT
4'-0" MINIMUM
NO JOINTS IN PIPE
WITHIN MAS
12" MIN
DRAINAGE PIPE
MONOLITHIC POUR
COMPRESSIBLE
BACKING ROD (TYP.)
FILL WITH NON-SETTING
CAULKING (TYP.)
GALVINIZED STEEL PIPE SLEEVE
(1/4" MIN THICKNESS) CAST INTO WALLS
8" MIN.
NOTES:
1. ALL CONFLICT STRUCTURES SHALL CONFORM TO THE DETAILS SHOWN ON THIS DRAWING, AND TO THE REQUIRMENTS OF ASTM C-478 AND TO CHAPTER 6, SECTION 6-1.13.3 OF THIS DOCUMENT.
2. POTABLE WATER PIPE SHALL NOT PASS THROUGH OR CONTACT SANITARY SEWER STRUCTURE.
3. GALVINIZED STEEL PIPE SLEEVE SHALL HAVE A MINIMUM THICKNESS OF 0.25".

A 21


NOTES:
1. MAINTENANCE ACCESS STRUCTURES SHALL CONFORM TO ASTM STANDARD C-478 (LATEST REVISION) FOR PRECAST CONCRETE.
2. SEE CHAPTER 11, SEC. 11-2, FOR ADDITIONAL REQUIRMENTS.
3. GRADE RINGS MAY BE USED IN LIEU OF BRICKS WITH APPROVAL BY THE HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION.
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
OPTIONAL PRECAST CONCRETE
SHALLOW MAINTENANCE
ACCESS STRUCTURE DETAIL
Approved by: DJH
Revised: 6/01/05 WRH
22
DWG. NO.
C.I. FRAME & COVER
USF 420 OR APPROVED EQUAL
CONCRETE (TYP.)
LIMEROCK BASE
1/2" COAT OF CEMENT MORTAR
APPLY CEMENT MORTAR COATING
5 COURSES MAX.
2 COURSES MIN.
7"
4' - 0" MIN. I.D.
APPROVED SEAL
OPENING SIZE PIPE O.D.+ 6"
SOLID MORTAR
8" MIN. (TYP.)
4" MIN.
4" MIN.
MONOLITHIC POUR
8" MIN.
1'- 8" MIN.
1'-6" MIN.
1'-1" MIN.
3' - 0" MIN. COVER




TYPICAL MONITORING WELL

NOTE: REFER TO RESTORATION DETAIL WHEN MONITORING WELL IS PLACED IN CONCRETE OR ASPHALT PAVEMENT.

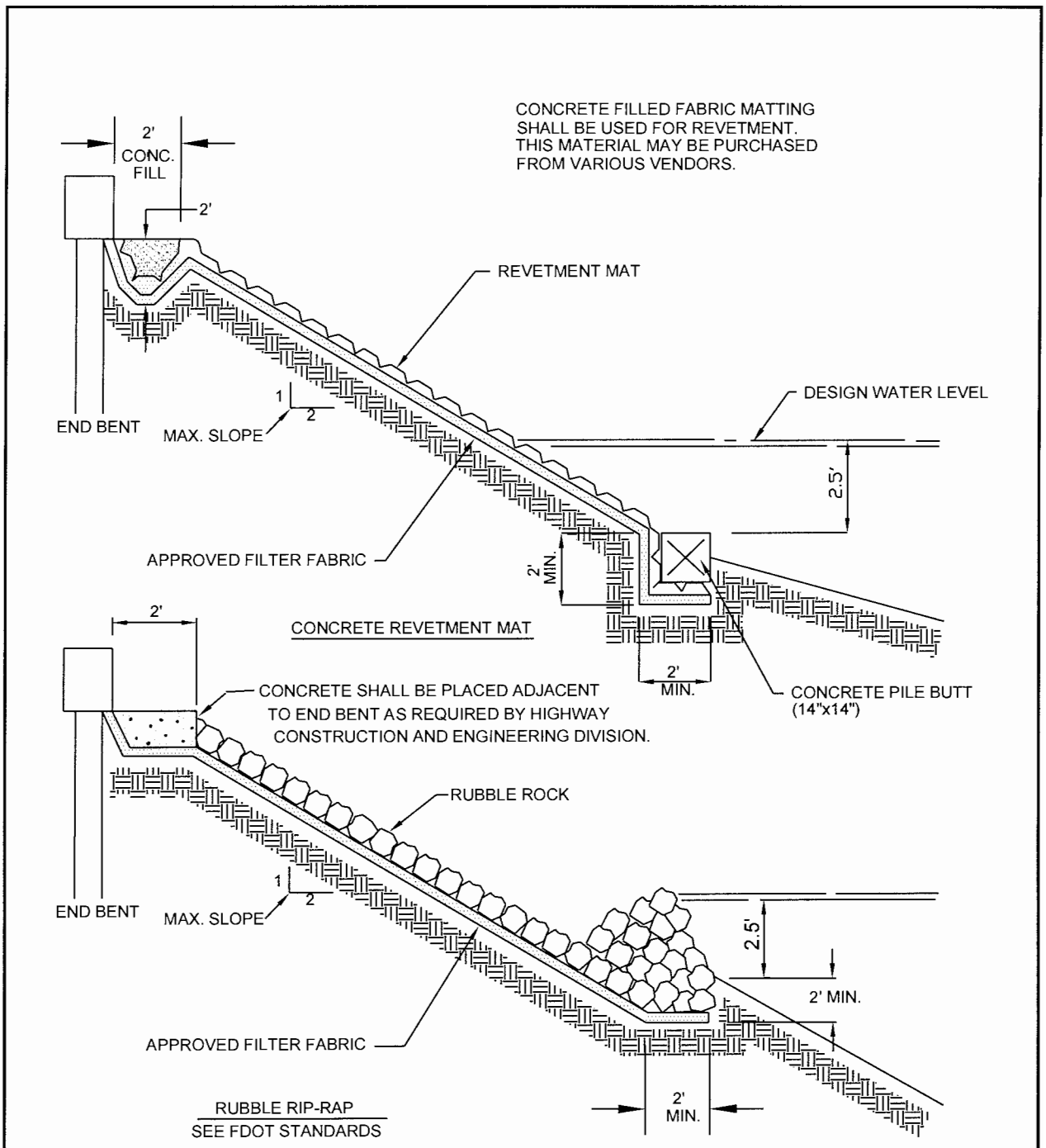
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

MONITORING WELL
TYPICAL SECTION & DETAILS

Approved by: DJH
Revised: 6/01/05 WRH

23
DWG. NO.

A 23




NOTE:
SAND-CEMENT RIP RAP IS NOT
ACCEPTABLE AS SLOPE PROTECTION.

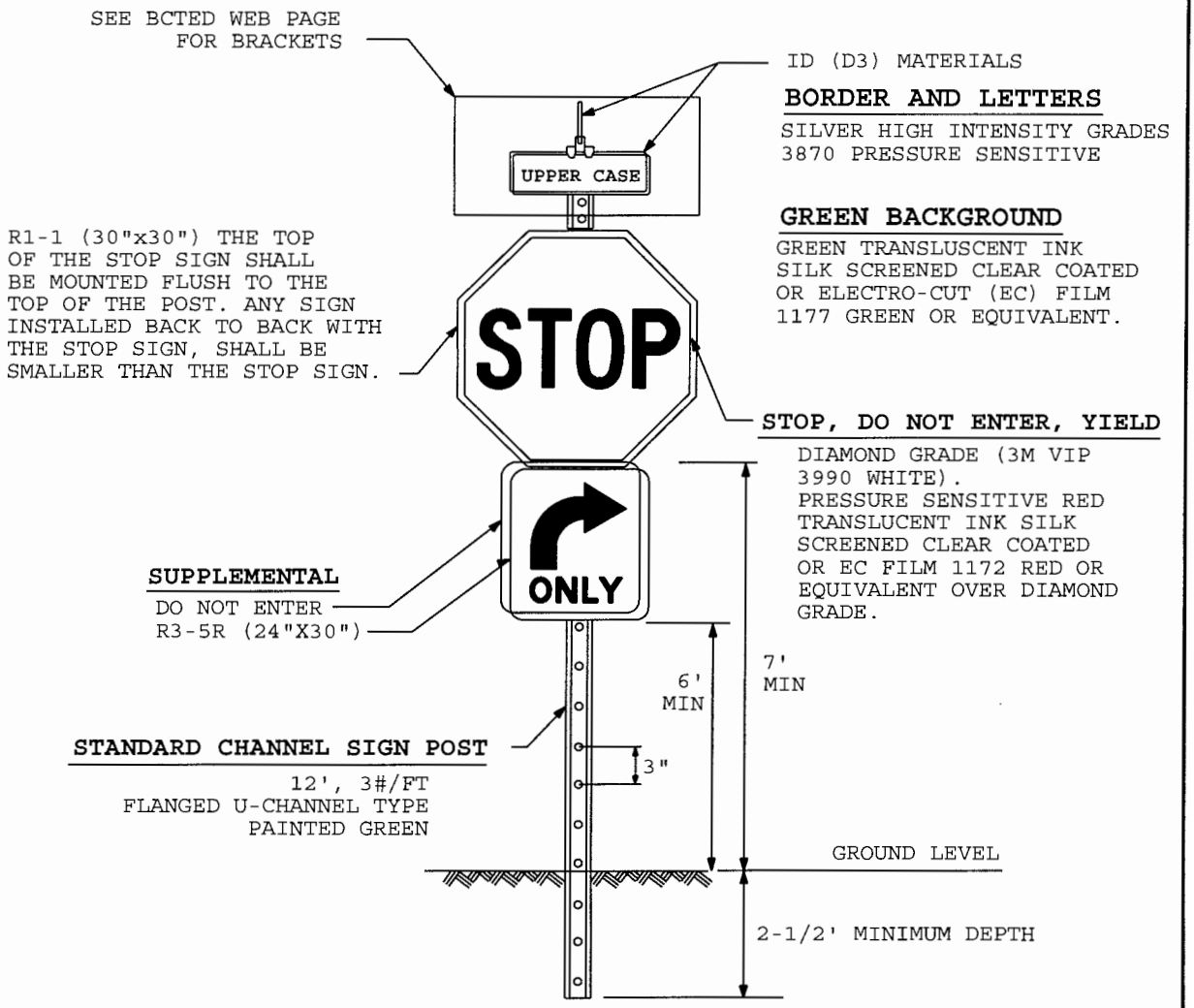
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

SLOPE PROTECTION
AT BRIDGES

Approved by: DJH
Revised: 6/01/05 WRH

24
DWG. NO.

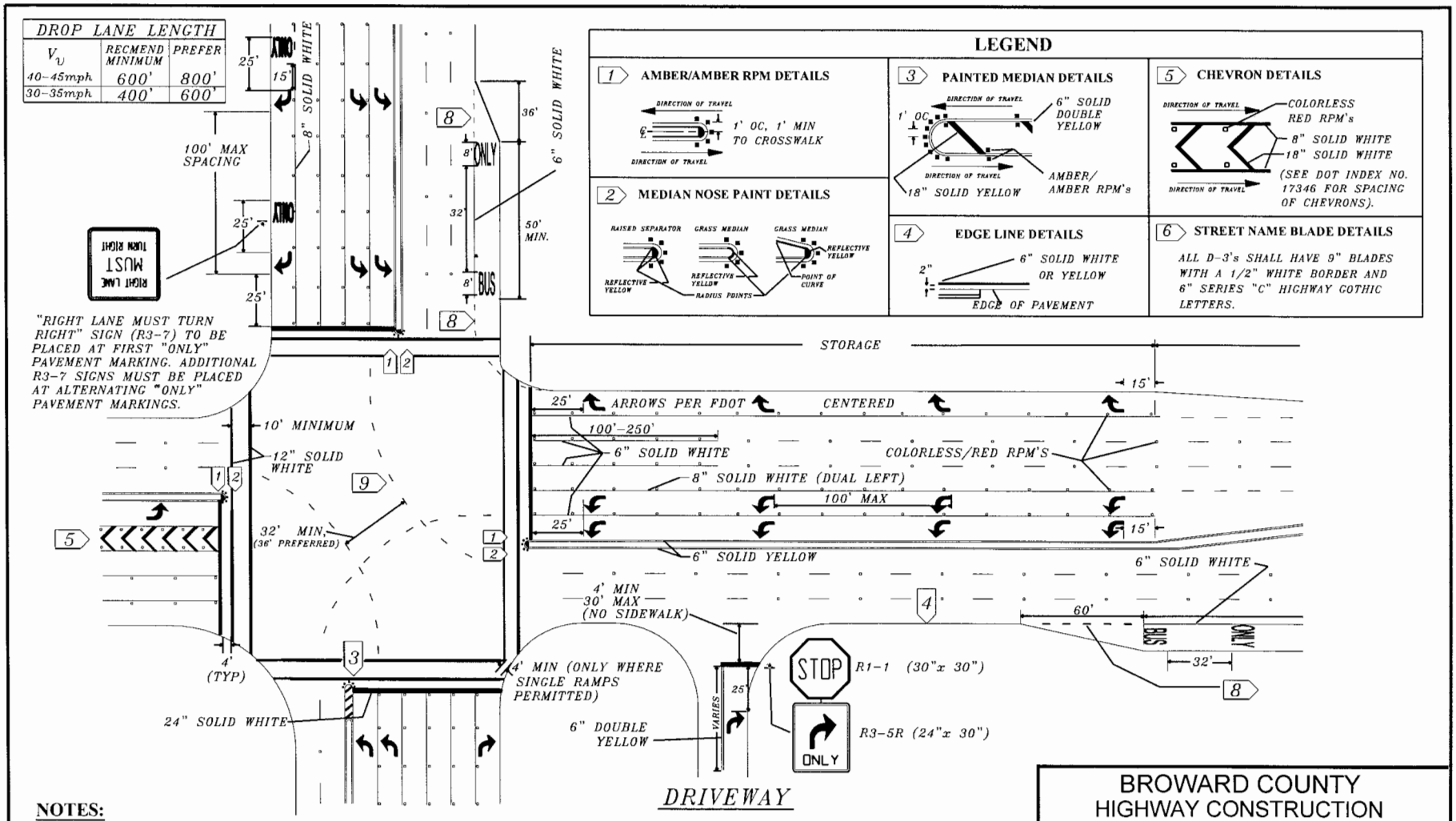
A 24




## STOP SIGN AND STREET IDENTIFICATION ASSEMBLY

## TYPICAL DETAILS

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| STOP SIGN AND STREET IDENTIFICATION ASSEMBLY TYPICAL DETAILS | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 25<br>DWG. NO. |




**NOTES:**

1. ALL PAVEMENT MARKINGS SHALL BE ALKYD BASED THERMOPLASTIC AND FULLY RETROREFLECTORIZED.
2. ALL PAVEMENT MARKINGS ON PAVER SYSTEMS SHALL BE 3M 5730/31 TAPE AND APPLIED WITH AN E44 CONTACT CEMENT AS PER MANUFACTURER'S SPECIFICATIONS.
3. ALL PAVEMENT MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
4. SEE FDOT INDEX NO. 17352 FOR PLACEMENT OF RPM's. (FOR BULLNOSE RPM TREATMENT, SEE LEGEND NO. 1)
5. RPM's SHALL BE CLASS "B" 911 OR EQUIVALENT, APPLIED WITH EPOXY OR BITUMINOUS ADHESIVE.
6. FDOT APPROVED SEALER SHALL BE USED WHEN APPLYING MARKINGS ON CONCRETE.
7. FOR BIKE LANE DETAILS SEE FDOT INDEX NO. 17346.

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

# PAVEMENT MARKINGS AND SIGNS - DETAIL SHEET

Approved by: DJH
Revised: 6/01/05 WRH

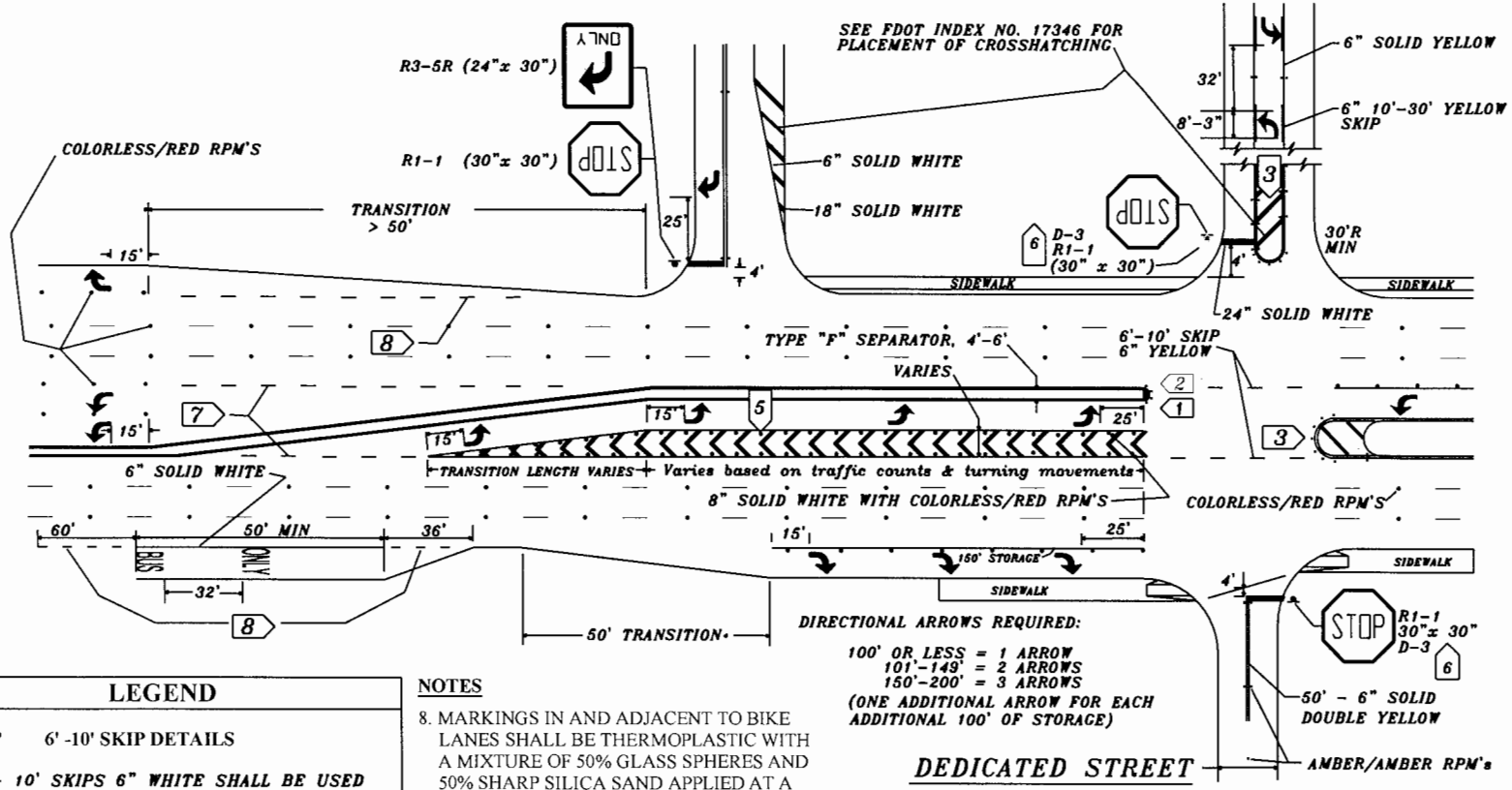
26
DWG. NO.

SHEET 1 OF 2



City of Fort Lauderdale
Bid 12204-293
CAM 19-0760
Exhibit 5
Page 505 of 549

## TWO-WAY LEFT TURN LANE




### LEGEND

**7** 6' -10' SKIP DETAILS

*6' - 10' SKIPS 6" WHITE SHALL BE USED FOR THE FOLLOWING CONDITIONS:*

- *HORIZONTAL CURVE SECTIONS*
- *CHANGES IN HORIZONTAL ALIGNMENT*
- *TRANSITIONS GREATER THAN 100'*

**8** 2' -4' SKIP DETAILS

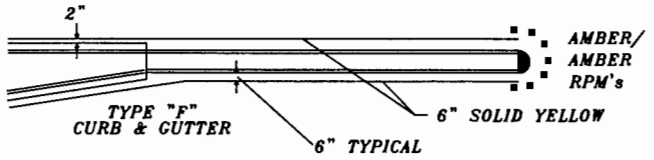
*2' - 4' SKIPS 6" WHITE SHALL BE USED FOR THE FOLLOWING CONDITIONS:*

- *RADIUS GUIDE LINES BETWEEN DUAL LEFT TURN MOVEMENTS (90' RADIUS PREFERRED OR AS NOTED ON PLANS)*
- *BUS BAY TRANSITIONS*

### NOTES

8. MARKINGS IN AND ADJACENT TO BIKE LANES SHALL BE THERMOPLASTIC WITH A MIXTURE OF 50% GLASS SPHERES AND 50% SHARP SILICA SAND APPLIED AT A RATE OF 0.2 LBS. PER SQUARE FOOT.
9. EXISTING MARKINGS SHALL BE REMOVED BY WATER BLASTING OR SAND BASTING ONLY.
10. ALL STOP BARS SHALL BE 4' BEHIND CROSSWALK OR SIDEWALK.

**9** TYPE IV SEPARATOR DETAILS




BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

# PAVEMENT MARKINGS AND SIGNS - DETAIL SHEET

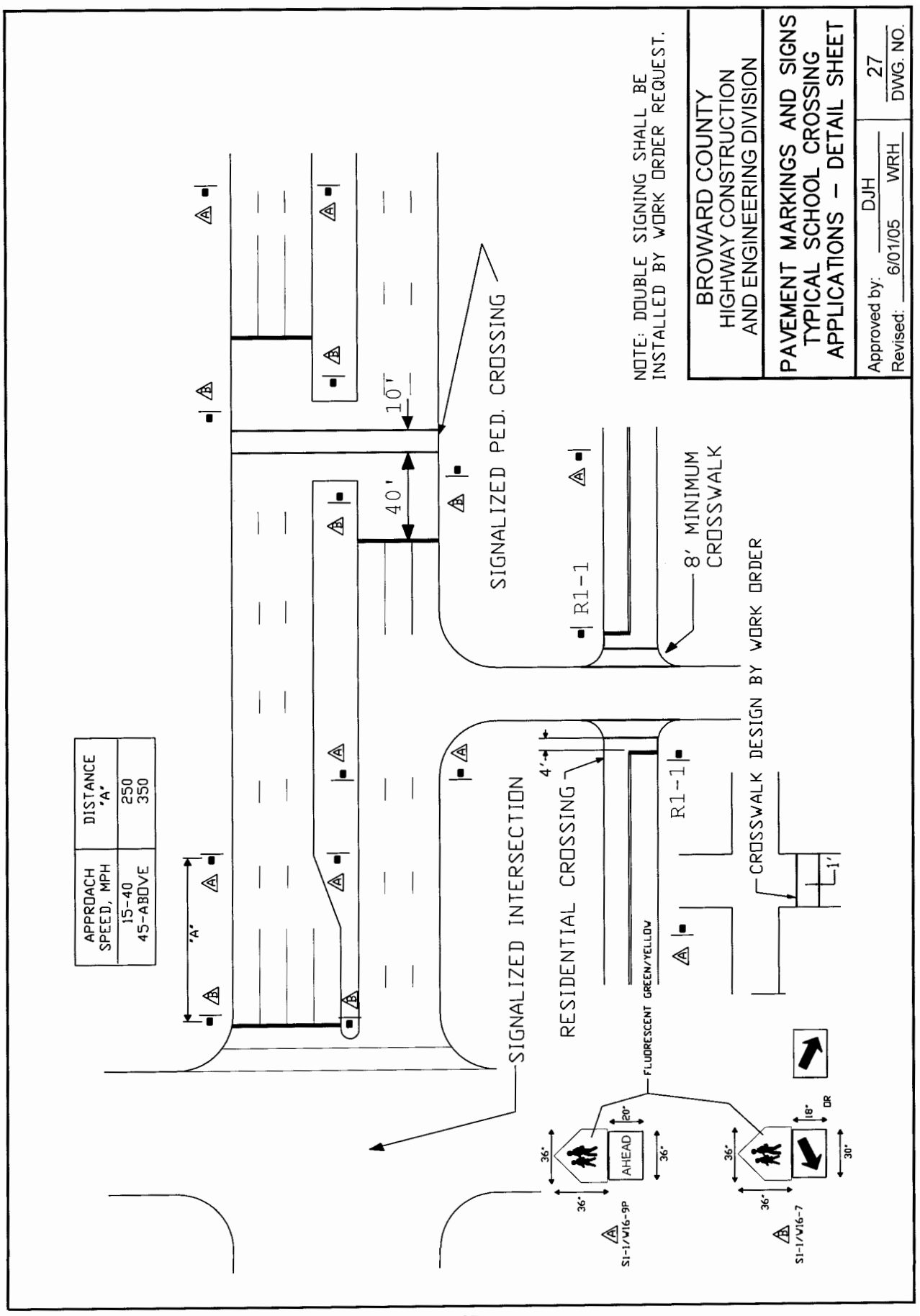
| Approved by: DJH | 26 |
|---|---|
| Revised: 6/01/05 WRH | DWG. NO. |

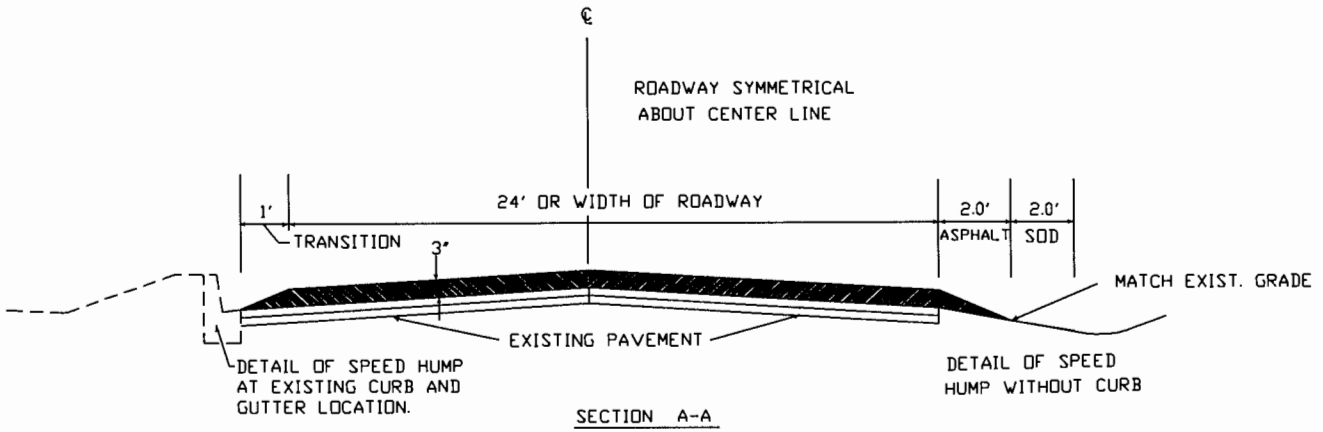
SHEET 2 OF 2



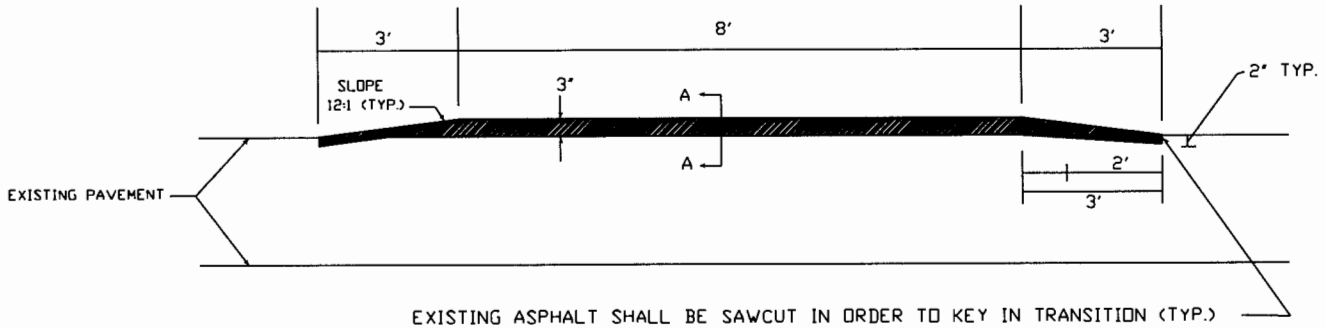
City of Fort Lauderdale

Bid 12204-293


APPROACH SPEED, MPH
DISTANCE 'A'
15-40 250
45-ABOVE 350
'A'
40'
10'
SIGNALIZED PED. CROSSING
R1-1
8' MINIMUM CROSSWALK
NOTE: DOUBLE SIGNING SHALL BE INSTALLED BY WORK ORDER REQUEST.
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
PAVEMENT MARKINGS AND SIGNS
TYPICAL SCHOOL CROSSING
APPLICATIONS – DETAIL SHEET
Approved by: DJH
Revised: 6/01/05 WRH
27
DWG. NO.
SIGNALIZED INTERSECTION
RESIDENTIAL CROSSING
4'
FLUORESCENT GREEN/YELLOW
R1-1
CROSSWALK DESIGN BY WORK ORDER
1'
AHEAD
20"
36"
18"
DR
30"
S1-1/W16-9P
S1-1/W16-7




SECTION A-A




PROFILE VIEW

*NOTE:

PRIOR TO INSTALLATION OF SPEED HUMP AND NEW CURB AND GUTTER DRAINAGE FEATURES SHALL BE INVESTIGATED.

CONSTRUCTION MATERIALS

THE SPEED HUMP CAN BE PRECAST CONCRETE SECTIONS, CONCRETE CAST ON SITE, ASPHALT OR BRICK/CONCRETE PAVERS.

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

# SPEED HUMP DETAIL

Approved by: DJH
Revised: 6/01/05 WRH

28
DWG. NO.

A 28

City of Fort Lauderdale
Bid 12204-293
CAM 19-0760
Exhibit 5
Page 508 of 549

# TRAFFIC ENGINEERING DIVISION
# TRAFFIC SIGNAL SECTION

**(Guidelines for Controller Cabinet Location)**

Ground mounted cabinets are preferred over both pole and pedestal mounted cabinets. Use ground mounted cabinets if possible.

The following criteria shall apply to the physical location of the cabinet. The criteria are listed in order of relative importance from most important to least important consideration:

1. Place the cabinet in the position that minimizes its chance of being struck by an out-of-control vehicle. Keep in mind that a vehicle usually loses control after entering the intersection and that a left-turning vehicle has a greater chance of losing control than a straight-through or right-turning vehicle.

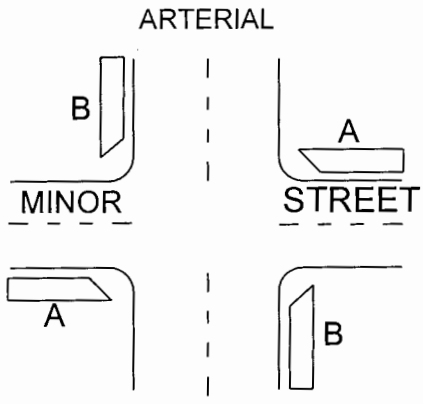
2. Place the cabinet in a position that shall minimize the chance of flood damage. Avoid placing the cabinet in low places around the intersection.

3. Place the cabinet in a position for which the maximum number of controller phases can be monitored by observation of vehicle and pedestrian signal heads.

4. Place the cabinet in the position that shall maximize its accessibility to Traffic Engineering Department personnel. Select a position near convenient parking. Also select a position where vegetation or steep slopes shall not cause problems.

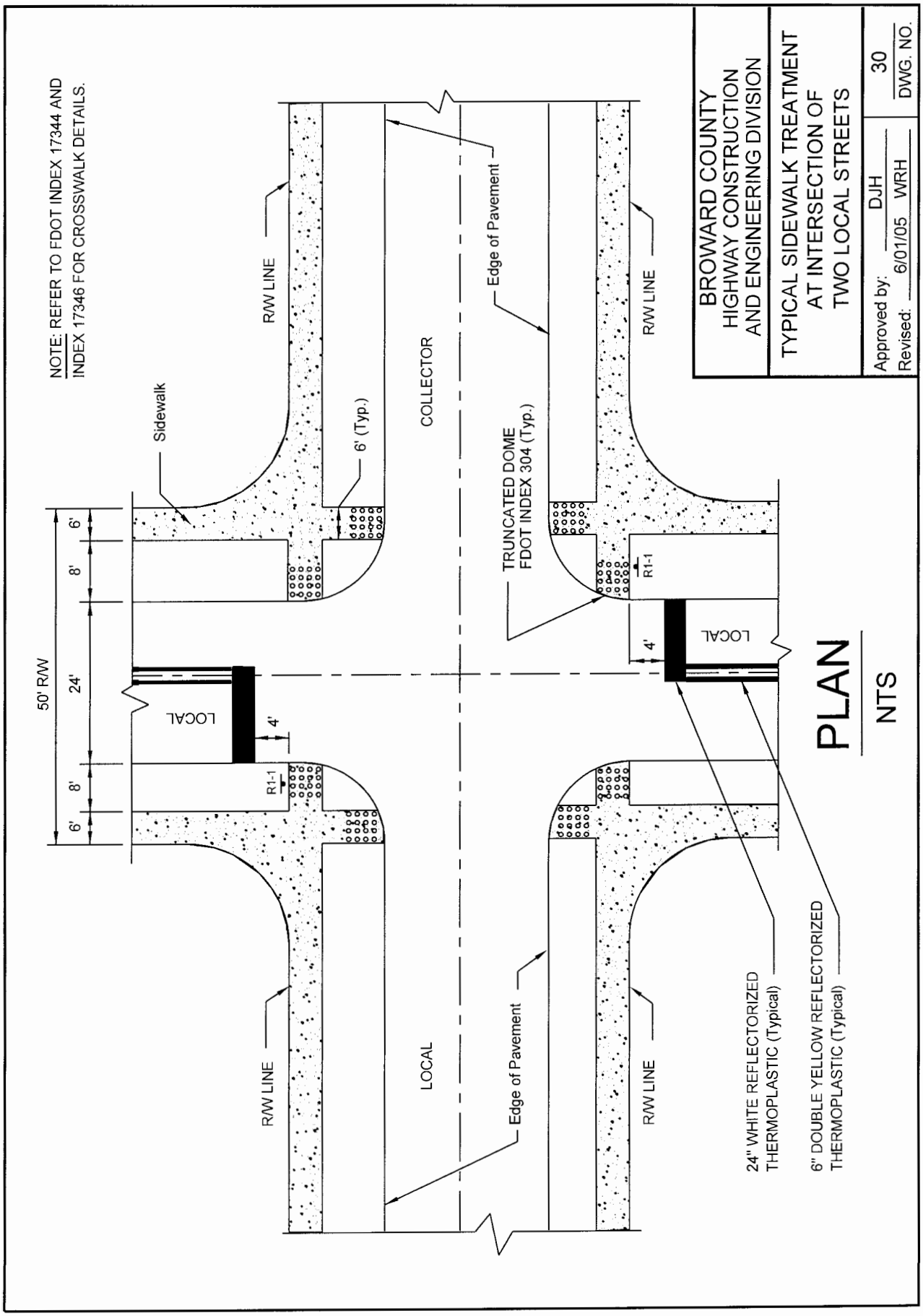
5. Place the cabinet in a position that shall minimize its chances of suffering lighting damage. Do not place it near objects that may attract lighting, such as tall trees.

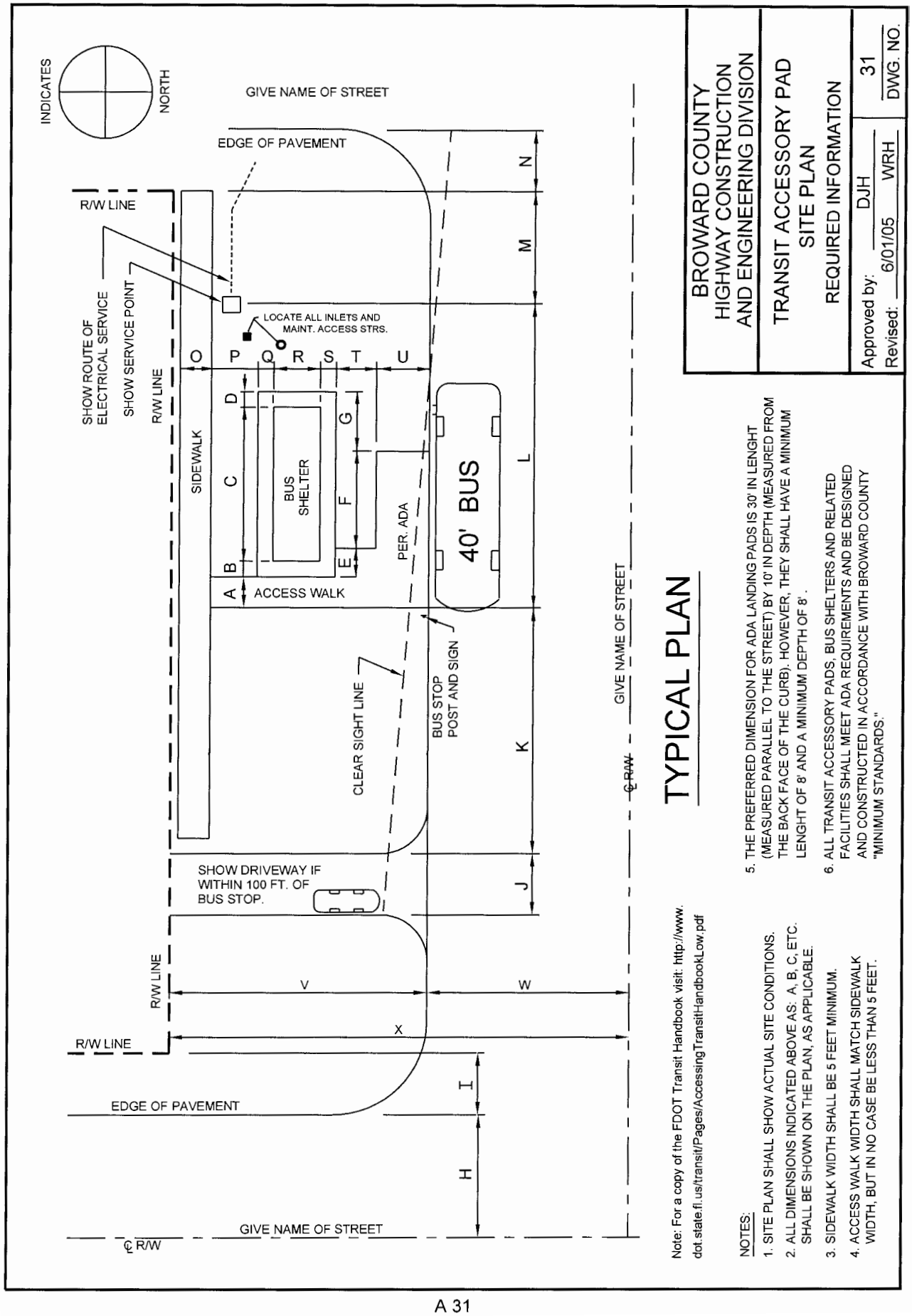
6. Place the cabinet in the area of greatest illumination and nearest center of activity, such as service stations and stores. This will increase visibility and safety when working in cabinets after dark. If the nearest pole does not have a street light, make sure a street light request is made.




CONTROLLER LOCATION "A" IS PREFERRED, "B" IS ACCEPTABLE.

| BROWARD COUNTY HIGHWAY CONSTRUCTION AND ENGINEERING DIVISION | |
|---|---|
| CONTROLLER CABINETS LOCATION GUIDELINES | |
| Approved by: DJH<br>Revised: 6/01/05 WRH | 29<br>DWG. NO. |


NOTE: REFER TO FDOT INDEX 17344 AND INDEX 17346 FOR CROSSWALK DETAILS.
BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION
TYPICAL SIDEWALK TREATMENT
AT INTERSECTION OF
TWO LOCAL STREETS
Approved by: DJH
Revised: 6/01/05 WRH
30
DWG. NO.
PLAN
NTS
50' R/W
6'
8'
24'
8'
6'
Sidewalk
6' (Typ.)
R/W LINE
COLLECTOR
Edge of Pavement
TRUNCATED DOME
FDOT INDEX 304 (Typ.)
LOCAL
4'
R1-1
LOCAL
Edge of Pavement
24" WHITE REFLECTORIZED
THERMOPLASTIC (Typical)
6" DOUBLE YELLOW REFLECTORIZED
THERMOPLASTIC (Typical)




# TYPICAL PLAN

Note: For a copy of the FDOT Transit Handbook visit: http://www.dot.state.fl.us/transit/Pages/AccessingTransit-HandbookLow.pdf

NOTES:

1. SITE PLAN SHALL SHOW ACTUAL SITE CONDITIONS.
2. ALL DIMENSIONS INDICATED ABOVE AS: A, B, C, ETC. SHALL BE SHOWN ON THE PLAN, AS APPLICABLE.
3. SIDEWALK WIDTH SHALL BE 5 FEET MINIMUM.
4. ACCESS WALK WIDTH SHALL MATCH SIDEWALK WIDTH, BUT IN NO CASE BE LESS THAN 5 FEET.
5. THE PREFERRED DIMENSION FOR ADA LANDING PADS IS 30' IN LENGHT (MEASURED PARALLEL TO THE STREET) BY 10' IN DEPTH (MEASURED FROM THE BACK FACE OF THE CURB). HOWEVER, THEY SHALL HAVE A MINIMUM LENGHT OF 8' AND A MINIMUM DEPTH OF 8' .
6. ALL TRANSIT ACCESSORY PADS, BUS SHELTERS AND RELATED FACILITIES SHALL MEET ADA REQUIREMENTS AND BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH BROWARD COUNTY "MINIMUM STANDARDS."

BROWARD COUNTY
HIGHWAY CONSTRUCTION
AND ENGINEERING DIVISION

TRANSIT ACCESSORY PAD
SITE PLAN
REQUIRED INFORMATION

Approved by: DJH
Revised: 6/01/05 WRH

31
DWG. NO.

A 31

# APPENDIX B

## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

(SEE SHEETS B-7 AND B-8 FOR NOTES)

| | |
|---|---|
| Type of Facility | Rural & Urban Freeways and Rural Arterial & Collectors: Design speed of 45 mph or greater. Projected ADT (20 yr) of 1500 or greater. |
| Embankment Slope | Fill Height — Embankment Slope<br>0'- 5' ..... 6:1<br>5'- 10'..... 6:1 to edge of CZ & 4:1<br>10'- 20' ..... 6:1 to edge of CZ & 3:1<br>Over 20' ..... 2:1 (with guardrail)<br>R/W cost shall be considered in urban areas when using these slopes. |
| Clear Widths for Bridges (see note 25) | Freeways, Divided Arterials & Collectors (4 or more lanes): Travel lanes plus 10' rt. and 6' lt.<br>Undivided Arterials & Collectors: Travel lanes plus approach shoulder width |
| Back Slope | 4:1 (Normal) |
| Guard Rail Location | Shoulder width plus 2' to face of guardrail (at shoulder line when shoulder width is 12'). May be desirable to locate on front slope; see Detail K, Index No. 400. |
| Signs | Not generally in median. Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 17302. All supports shall be breakaway, or frangible, except overhead cantilever or truss signs. |
| Light Poles | Not generally in median except when shielded by barrier. Outside clear zone or frangible base 20' from edge of travel lane and 14' minimum from edge of auxiliary lane or behind an approved barrier that is justified for other reasons. |
| Utility Pole, Fire Hydrant, etc. | Not in median. Not within R/W of the main travel way of freeways. For other facilities outside the clear zone. Normally 6.5' inside R/W when beyond clear zone, otherwise as close as practical to R/W line (see note 15). |
| Railroad Crossing Device | Not on freeway.<br>10' min. from edge of travel lane or 6' min. from edge of auxiliary lane to near edge of device. No guardrail (see note 14). |
| Median Width | Freeways:<br>60' min .....60mph and over (40' min. when lanes added in median)<br>40' min .....under 60 mph<br>Other Divided Highways:<br>40' min .....55mph and over<br>22' min .....under 55 mph |
| Trees existing or expect 4" dia. measured 4' above the ground (see note 10). | Outside clear zone. Desirable criteria recommended for freeways (see note 12). |

# APPENDIX B

## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

(SEE SHEETS B-7 AND B-8 FOR NOTES)

| | |
|---|---|
| Type of Facility | Rural Arterials & Collectors: Design speed of 45 mph or greater. Projected ADT (20 yr) less than 1500. |
| Embankment Slope | Fill Height — Embankment Slope<br>0'-5' .....6:1 except where R/W is not sufficient, then 6:1 to edge of CZ and 3:1 shall be permitted<br>5'- 20'.....6:1 to edge of CZ and 3:1, except where R/W is insufficient, then 2:1 with guardrail shall be permitted |
| Clear Widths for Bridges (see note 25) | Travel lanes plus approach shoulder widths |
| Back Slope | 4:1 where R/W permits, or 3:1 |
| Guard Rail Location | Shoulder width plus 2' to face of guardrail (8' min.). May be desirable to locate on front slope; see Detail K, Index No. 400. |
| Signs | Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 17302. All supports shall be breakaway, or frangible, except cantilever or truss signs. |
| Light Poles | Outside clear zone for both frangible and non-frangible bases if clear zone is 20' feet or less. Desirably 20' feet from edge of auxiliary lane or behind approved barrier that is justified for other reasons. Frangible bases may be placed at 20' from thru lane and 14' from auxiliary lane for clear zones greater than 20'. |
| Utility Pole, Fire Hydrant, etc. | Outside clear zone. Normally 6.5' inside R/W when beyond clear zone, otherwise as close as practical to R/W line (see note 15). |
| Railroad Crossing Device | 10' min. from edge of travel lane or 6' min. from edge of auxiliary lane to near edge of device. No guardrail (see note 14). |
| Median Width | 22' minimum |
| Trees existing or expect 4" diameter measured 4' above the ground (see note 10). | Outside clear zone |

# APPENDIX B

## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

(SEE SHEETS B-7 AND B-8 FOR NOTES)

| | |
|---|---|
| Type of Facility | Rural Collectors: Design speed of 40 mph or less<br>All Rural Local - All speeds |
| Embankment Slope | Fill Height — Embankment Slope<br>0'-5' .....6:1 except where R/W is not sufficient, then 6:1 to edge of CZ and 3:1 shall be permitted<br>5'- 20'.....6:1 to edge of CZ & 3:1, except where R/W is insufficient, then 2:1 with guardrail shall be permitted |
| Clear Widths for Bridges (see note 25) | Travel lanes plus approach shoulder widths |
| Back Slope | 4:1 where R/W permits or 3:1 |
| Guard Rail Location | Shoulder width plus 2' to face of guardrail (8' min.). May be desirable to locate on front slope; see Detail K, Index No. 400. |
| Signs | Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 17302. All supports shall be breakaway, or frangible, except cantilever or truss signs. |
| Light Poles | Outside clear zone or behind barrier that is justified for other reasons |
| Utility Pole, Fire Hydrant, etc. | Outside clear zone. Not in median. Normally 6.5' inside R/W when beyond clear zone, otherwise as close as practical to R/W line (see note 15). |
| Railroad Crossing Device | Minimum from edge of travel lane to near edge of device:<br>Greater than 45 mph ..... 10'<br>35-45 mph ..... 8'<br>30 mph or less..... 6'<br>Minimum auxiliary lanes..... 6'<br>No guardrail (see note 14) |
| Median Width | 19.5' minimum..... 45-50 mph<br>15.5' minimum..... 40 mph or less<br>(Greater widths desirable)<br>For reconstruction projects the min. painted median width with provisions for left turn is 10' (greater widths desirable). |
| Trees existing or expect 4" diameter measured 4' above the ground (see note 10). | Outside clear zone |

# APPENDIX B

## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

(SEE SHEETS B-7 AND B-8 FOR NOTES)

| | |
|---|---|
| Type of Facility | Urban Arterials & Collectors: Design speed of 30-50 mph (without curb and gutter) |
| Embankment Slope | Fill Height — Embankment Slope<br>0'-5' .....6:1 except where R/W is not sufficient, then 6:1 to edge of CZ and 3:1 shall be permitted<br>5'- 20'.....6:1 to edge of CZ & 3:1, except where R/W is insufficient, then 2:1 with guardrail shall be permitted |
| Clear Widths for Bridges (see note 25) | Divided: Travel lanes plus approach shoulder width rt. and 6' lt., unless full median section is carried across structure<br>Undivided: Travel lanes plus approach shoulder width |
| Back Slope | 4:1 where R/W permits or 3:1 |
| Guard Rail Location | Shoulder width plus 2' to face of guardrail (8' min.) |
| Signs | Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 17302. All supports shall be breakaway, or frangible, except cantilever or truss signs. |
| Light Poles | Outside clear zone or behind approved barrier that is justified for other reasons. Frangible bases may be placed at 20' from thru lane and 14' from auxiliary lane for clear zones greater than 20'. |
| Utility Pole, Fire Hydrant, etc. | Outside clear zone. Not in median. Normally 6.5' inside R/W when beyond clear zone, otherwise as close as practical to R/W line. |
| Railroad Crossing Device | Minimum from edge of travel lane to near edge of device:<br>Greater than 45 mph ..... 10'<br>35-45 mph..... 8'<br>30 mph or less..... 6'<br>Minimum auxiliary lanes..... 6'<br>No guardrail (see notes 13 & 14). |
| Median Width | 19.5' minimum..... 45-50 mph<br>15.5' minimum..... 40 mph or less<br>(Greater widths desirable)<br>For reconstruction projects the min. painted median width with provisions for left turn is 10' (greater widths desirable). |
| Trees existing or expect 4" diameter measured 4' above the ground (see note 10). | Outside clear zone. |

# APPENDIX B

## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

(SEE SHEETS B-7 AND B-8 FOR NOTES)

| | |
|---|---|
| Type of Facility | Urban Arterials & Collectors: Design speed of 45 mph or less (curb and gutter) |
| Embankment Slope | Fill Height Embankment Slope<br>0'-20'.....2:1 or to suit property owner, not flatter than 6:1<br>R/W cost shall be considered for high fill sections in urban areas. |
| Clear Widths for Bridges (See note 25) | Full Section (face to face of curb) plus sidewalk. When concrete barrier wall is placed in front of sidewalk a minimum clearance of 2.5' is required between the travel lane or bicycle lane and the toe of the barrier wall. |
| Back Slope | 2:1 or to suit property owner, Not flatter than 6:1. |
| Guard Rail Location | Normally flush with face of curb |
| Signs | 2' minimum from face of curb to inside edge of sign panel. Placement shall not block sidewalk. |
| Light Poles | 4' minimum from face of curb (see note 8) |
| Utility Pole, Fire Hydrant, etc. | Not in median. 4' minimum from face of curb (see note 8) |
| Railroad Crossing Device | 2.5' from face of curb to near edge of device |
| Median Width | No minimum. |
| Trees existing or expect 4" diameter measured 4' above the ground (see note 10). | 4' minimum from face of curb when curb height is 6" or greater (see note 11). |

# APPENDIX B

## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY
## DESIGN SPEED - CLEAR ZONE (CZ) REQUIREMENTS
## (See Notes 16, 17, 18, & 24)

**Rural & Urban Freeways and Rural Arterial & Collectors: Design speed of 45 mph or greater. Projected ADT (20 yr) of 1500 or greater.**

| | MINIMUM | | DESIRABLE | |
|---|---|---|---|---|
| Design Speed(mph) | Travel Lane | Auxiliary Lanes and Ramps | Travel Lane | Auxiliary Lanes and Ramps |
| 60-70 | 30' | 18' | 36' | 24' |
| 55 | 24' | 14' | 30' | 18' |
| 45-50 | 18' (see Note 19) | 14' (see Note 19) | 24' | 14' |

**Rural Arterials & Collectors: Design speed of 40 mph or greater. Projected ADT (20 yr) less than 1500.**

| | MINIMUM | | DESIRABLE | |
|---|---|---|---|---|
| Design Speed(mph) | Travel Lane | Auxiliary Lanes and Ramps | Travel Lane | Auxiliary Lanes and Ramps |
| 60-70 | 24' | 14' | 30' | 18' |
| 55 | 18' | 14' | 24' | 14' |
| 45-50 | 14' | 14' | 20' | 14' |

**Rural Collectors: Design speed of 40 mph or less. All Rural Local - All speeds.**

| |
|---|
| 14' Desirable. 10' minimum from edge of both travel & auxiliary lane. |

**Urban Arterials & Collectors: Design speed of 30-50 mph (without curb and gutter)**

| | MINIMUM | | DESIRABLE | |
|---|---|---|---|---|
| Design Speed(mph) | Travel Lane | Auxiliary Lanes and Ramps | Travel Lane | Auxiliary Lanes and Ramps |
| 50 | 18' | 10' | 24' | 14' |
| 45 | 18' (see notes 20 & 22) | 10' | 24' | 14' |
| 30-40 | 14' (see notes 21 & 22) | 6' (see Note 23) | 18' | 10' |

**Urban Arterial & Collectors: Design speed of 45 mph or less (curb and gutter).**

| |
|---|
| 4' from face of curb (see note 8). Bridge piers normally shall be 16' minimum from edge of travel lane (see note 9). |

# APPENDIX B
## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY - NOTES

1. Design speed shall be established using realistic anticipated operating speed.

2. Preferred ditch cross sections are shown on pages 3-9 and 3-10 of the Roadside Design Guide.

3. Consideration should be given to maintaining greater than the specified clearance slopes where feasible and practical.

4. Values shown in the tables shall be used on all new construction and on all reconstruction projects to the extent that economic and environmental considerations and R/W limitations shall allow. For definitions of new construction and reconstruction see the latest edition of FDOT "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways." The values shown in the tables do not apply to RRR projects. Driving lane is any traffic lane, travel or auxiliary.

5. An Auxiliary Lane is that portion of the roadway adjoining the traveled way for parking, speed changes, turning, storage for turning, weaving, truck climbing, or for other purposes supplemental to thru traffic movement.

6. Traveled Way (Travel Lanes) is the portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

7. On projects where the four (4) foot minimum offset cannot be reasonably obtained and other alternatives are deemed impractical, the minimum may be reduced to two and one-half (2.5) feet.

8. At locations where immediately adjacent development such as buildings, etc., provide less clearance, bridge piers can be placed to provide clearance less than sixteen (16) feet. Adequate sight distance for crossing maneuvers at intersections should be provided.

9. Offsets shown are for existing or newly planted trees. If existing trees are close to, but less than the minimum offset indicated, other factors should be considered to determine adequacy of offset, i.e. ADT; operating speed, accident history, size, age and type of tree; protection by a barrier, etc. Newly planted trees may be placed behind barriers that are provided for other reasons. The minimum setback distance from the back of concrete barriers, walls, abutments or other rigid obstructions is 4' for newly planted trees. For W-beam guardrail the minimum setback is 6' from the face of the rail for newly plants. Offset shown apply to both outside and median highways unless otherwise noted. When trees are planted in median, adequate sight distance at intersections, turnouts and median openings, etc., shall be maintained.

10. Ten (10) feet minimum from driving lane when curb height is less than six (6) inches, or when curb height has been reduced by resurfacing.

12. When offset is established, care shall be taken to avoid blocking sight distance to roadside signs.

# APPENDIX B
## DESIGN CRITERIA RELATED TO HIGHWAY SAFETY - NOTES (Continued)

13. For divided facilities with curbed medians and undivided facilities utilizing curbed separations at crossings, two and one-half (2.5) feet from face of curb to near edge of signal device in accordance with Traffic Design Standards Index No. 17882.

14. Not less than two (2) feet from edge of any shoulder pavement.

15. Avoid encroachment on adjacent private property. The six and one-half (6.5) feet offset is to eliminate aerial encroachment.

16. Standard values are to be used for all new construction projects. These values may be reduced only where individually justified to mitigate critical social, economical and environmental impacts or to lessen excessive right-of-way costs. Standard values are also to be used for reconstruction projects: however, values less than desirable down to AASHTO minimum may be used where individually justified due to critical, social, economical, and environmental impacts and/or excessive right-of-way costs or when existing roadside obstacles are not considered hazardous as evidenced by field review and by accident history or accident potential

17. Where accident history indicates need, or where specific site investigation shows definitive accident potential, clear zones for rural and urban facilities (without curb) may be justified on the outside of horizontal curves in accordance with applicable clear zone requirements.

18. The use of barriers or other safety treatment is to be considered if clear zone requirements are not provided.

19. Ten (10) feet in median where Type-E curb is used on rural collectors with a design speed of 45 mph.

20. May be reduced to low speed condition criteria (30-40 mph) if conditions more nearly approach those for low speed.

21. May be reduced to ten (10) feet for collectors.

22. Ten (10) feet in medians where Type-E curb is used; four (4) feet from face of median curb where curb height is six (6) feet.

23. Four (4) feet from face of median curb where curb height is six (6) inches.

24. When a front slope steeper than 4:1 encroaches into the clear zone a clear runout area is to be provided at the bottom of the slope in accordance with the latest edition of the “Roadside Design Guide.”

25. See “Structures Design Guidelines,” latest edition, for further details.

# APPENDIX C
## PRECONSTRUCTION MEETING

*Representation:* The Highway Construction and Engineering Division shall determine required representation for the meeting. In general, the following individuals need to be present unless instructed otherwise by the Highway Construction and Engineering Division:

- The permittee, or a representative of the permittee
- Each Subcontractor, or a representative of the Subcontractor
- The Engineer of Record, or a representative of the Engineer of Record
- A representative from the Highway Construction and Engineering Division
- A representative from the Traffic Engineering Division
- A representative of the utility owner, if deemed necessary
- The owner, or the owner's representative, if deemed necessary
- Representatives of other agencies, as deemed necessary

*Required Documents:* The permittee is required to have the following items at the meeting:

- A copy of the Highway Construction and Engineering Division Permit
- A copy of the "Approved Plan," stamped by the Highway Construction and Engineering Division
- A copy of the approved Maintenance of Traffic Plan
- A copy of the approved Pavement Marking and Signage Plan
- A copy of the approved Signalization and Interconnect Plan, if applicable
- A copy of the approved School Flasher Plan, if applicable

*Construction Requirements:* All construction in public right-of-way shall be performed in accordance with the "Minimum Standards Applicable to Public Right-of-Way under Broward County Jurisdiction," here-in-after referred to as the "Minimum Standards," and the Permit Conditions as listed on the back of the Permit.

*Conflict between "Minimum Standards" and Regulatory Agency:* If a conflict should arise between the "Minimum Standards" and those of any other regulatory agency for work preformed within public right-of-way, the more stringent shall apply, as determined by the Highway Construction and Engineering Division.

*Conflict between "Minimum Standards" and Plans:* If a conflict should arise between the "Minimum Standards" and the approved plan (for work performed within public right-of-way) the more stringent requirement, as determined by the Highway Construction and Engineering Division shall apply.

*Start of Construction:* The Highway Construction and Engineering Division requires forty-eight (48) hours advance notice of intent to begin construction within public right-of-way.

*Scheduling Inspections or Tests:* The Highway Construction and Engineering Division requires twenty-four (24) hours advance notice for scheduling of any inspection(s) or testing within public right-of-way.

*Notice to the Highway Construction and Engineering Division:* To notify the Highway Construction and Engineering Division of intent to begin work or to schedule an inspection or test, call the Highway Construction and Engineering Division. All scheduling shall be confirmed by the Highway Construction and Engineering Division. Leaving a message on the “voice-mail” system is not considered “scheduling.” You shall also leave a return phone number, so that your request can be confirmed.

*Witness of Tests and Inspections:* All tests and inspections required within public right-of-way shall be witnessed by the following:

- A representative (inspector) of the Highway Construction and Engineering Division
- A representative of the Engineer of Record for the Project
- A representative of the (permitted) Engineering Contractor
- A representative of the testing lab (to perform and certify test results)
- A representative of the facility owner if testing of a public utility is being performed

*Work Hours:* The normal work hours for Engineering Division inspectors are from 7:30 A.M. to 4:00 P.M., Monday through Friday, except holidays. The normal work hours for Traffic Engineering Division maintenance of traffic technicians are from 7:00 A.M. to 5:00 P.M., Monday through Friday, except holidays. Without prior authorization from the Highway Construction and Engineering Division, Field Operations Supervisor, the permittee shall not be permitted to work outside the normal hours of operation, within public right-of-way, on work requiring Highway Construction and Engineering Division and/or Traffic Engineering Division representatives to be present.

*Overtime Authorization:* To obtain authorization for overtime operations, a request shall be made in writing by the permittee on a "Request for Overtime Authorization" form. This form can be obtained from the Highway Construction and Engineering Division, Field Operations Section, at 1 North University Drive, Suite 300, Plantation, FL 33324-2038. The form shall be completed by the permittee and submitted to the Highway Construction and Engineering Division, Field Operations Supervisor for authorization. This form supplements Permit Condition No. 21, listed on the back of the "Application for Permit" and the Permit document.

*Knowledge of Permit Conditions:* The permittee acknowledges when making application for permit that they are aware of all of the Permit Conditions listed on the back of the "Application for Permit" and the actual Permit form. Permit Condition No. 21 states that "In the event it becomes necessary, for any reason, to continue work operations beyond the normal hours of operation for the Division, the permittee whose name appears on the face of this Permit acknowledges commitment to pay the associated Highway Construction and Engineering Division and Traffic Engineering Division charged overtime expenses, prior to requesting a final inspection on the project."

*Overtime Inspection Charges:* Overtime inspection charges shall be recorded by the Highway Construction and Engineering Division and/or Traffic Engineering Division representative on a three (3) part "Inspector Overtime Record" form. The form shall show the permittee name and permit number; the date and time worked; total number of overtime hours charged; the rate at which the time was charged; the total amount charged for the specific overtime occurrence; the location and scope of work being performed by the permittee and a brief description of the reason it was necessary to work outside normal hours of operation.

*Retest Fees:* A retest fee shall be imposed for any unacceptable (failed) tests. Payment of this fee shall be made at the Highway Construction and Engineering Division offices at 1 North University Drive Suite 300, Plantation, FL 33324-2038, before any subsequent scheduling is done for related portions of the project. The fee may be paid in cash or by check, made payable to "Highway Construction and Engineering Division." A sequentially numbered County fee collection form (receipt) shall be generated to document each transaction.

*Responsibility for Actions and Quality of Work:* The permittee is the Contractor of Record. As such, that Contractor is solely responsible for the actions, safety, and quality of work of all Subcontractors performing work associated with this permit.

*Documents Required to be Onsite at all Times:* The following documents shall be onsite at all times during the course of construction:

- A copy of the Highway Construction and Engineering Division Permit
- A copy of the "Approved Plan," stamped by the Highway Construction and Engineering Division
- A copy of the approved Maintenance of Traffic Plan
- A copy of the approved Pavement Marking and Signage Plan
- A copy of the approved Signalization and Interconnect Plan, if applicable
- A copy of the approved School Flasher Plan, if applicable

*Conflicts or Proposed Revisions to Plans:* Conflicts or proposed revisions to the "Approved Plan" shall be brought to the attention of the Highway Construction and Engineering Division, by the Engineer of Record, or an appointed representative. Conflicts or revisions shall be reconciled in accordance with the requirements of the "Minimum Standards."

*Permit Suspension or Revocation:* Permit(s) may be suspended or revoked for violation of any of the "Permit Conditions" as listed on the reverse side of the permit, or if work is suspended for a time period in excess of ninety (90) days, unless a prior authorization has been requested and granted by the Highway Construction and Engineering Division.

*Required Inspections:* Inspections required by the Highway Construction and Engineering Division include, but are not limited to:

- Material sampling to establish soil/rock proctors, or Load Bearing Rating
- De-mucking operations

- Pipe, conduit or cable installation operations
- Trench densities; sub-grade “string line” and densities; first lift limerock and curb pad densities; final lift limerock “boarding” and densities
- Drainage structure, Sewer structure, Lift Station structure certifications
- Drainage inlet and apron forms and steel placement inspection
- Curb, sidewalk, concrete pours and taking of concrete test cylinders
- Sanitary sewer and storm sewer “lamping” and mandrel testing
- Sanitary sewer and storm sewer infiltration and exfiltration testing
- Pressure taps and sleeves, visual and hydrostatic pressure testing
- Base rock prime and sand; asphalt placement and swale restoration
- Preliminary and final public right-of-way inspections

*Submittal of Shop Drawings:* All shop drawings related to project construction shall be submitted for approval, via the Engineer of Record. No facility may be installed until such shop drawings have been reviewed and approved by the Public Works and Transportation Department

Note: If a product is listed on the Approved Product List, this does not mean that its use is endorsed by the Publics Works and Transportation Department, nor does it imply automatic approval of that product. Approval shall be based on whether it is appropriate for the intended use, and “or equal” products shall be approved on a case-by-case basis.

*Submittal of “As-built” Drawings:* Unless other provisions are granted by the Highway Construction and Engineering Division, placement of asphalt pavement shall not be authorized until limerock “as-built” drawings have been submitted to the Highway Construction and Engineering Division, via the Engineer of Record. Once the “as-built” drawings have been reviewed and approved, authorization to pave shall be given by the Highway Construction and Engineering Division.

*Completion of Construction:* When construction is completed, the permittee may request a “preliminary” final inspection. At this time the final “punch list” shall be generated. When the final “Final Certification Package” has been received, via the Engineer of Record, and has been found to be acceptable, the final inspection shall be performed. If all punch list items have been addressed, the project shall be accepted and placed into the one (1) year warranty/ maintenance period.

*Final Certification Package:* The “Final Certification Package” consists of the following items:

1. A letter of certification signed and sealed by a Professional Engineer, licensed to do work in the State of Florida (the Engineer of Record), stating that the project has been completed in substantial compliance with the approved plans and specifications.
2. One (1) set of “as-built” drawings signed and sealed by a Professional Surveyor and Mapper. The “as-built” drawings shall be on a copy of the approved plans and shall include the elevations and locations of all work performed in public right-of-way. In addition to this hard copy, the Engineer of Record shall submit a

copy of the storage medium containing the information from which the "as-built" drawing was produced. The Highway Construction and Engineering Division criteria for "as-built" drawings and CAD requirements are detailed in Chapter 3, Sections 3-8.2, and 3-8.2.1.

3. A copy of the density reports on all embankment, backfill, subgrade and limerock material used in public right-of-way.

4. An executed "Contractor/Supplier Release of Lien," on the approved County form. A copy of this form shall be supplied to the permittee who shall return the executed form to this office.

5. A letter of acceptance from the Broward County Traffic Engineering Division, approving the pavement marking (thermoplastic) and signing restoration, street lights, traffic signals, pedestrian signals, school flashers, communication conduit/interconnect cable, and all other traffic engineering related items.

*Maintenance of Traffic Plan:* The provisions of Chapter 3, Section 3-1.3 shall apply.

*MOT Set-up and Removal:* The MOT shall be established at the proper time and before any work is done, and shall be removed promptly at the end of work. Traffic lanes shall be opened as necessary in accordance with the provisions of the MOT.

*Contractor's Vehicles:* All Contractor vehicles shall have the company name clearly marked on the side.

*Damaged Utilities:* The permittee shall immediately notify the utility owner and repair any facility damaged while working in public right-of-way.

*Work in School Area:* No work is to be performed in a school area during posted school zone hours, and/or while children are present. The Traffic Engineering Division shall determine the school zone area.

*Sidewalk Maintenance:* All sidewalks shall be temporary patched and maintained until permanent restoration is accomplished.

*Instructions from Broward County Inspectors:* The permittee shall follow the instructions of Broward County Inspectors without argument.

*Safety Vests:* All personnel including the permittee, Engineer of Record, City, County or Testing Lab representative, visiting the site and present within the clear recovery zone shall wear an approved retro-reflective safety vest, which meets OSHA latest requirements.

*OSHA Rules:* All applicable OSHA rules shall be followed at all times.

Note: The above information is a list of certain important information that personnel working in public right-of-way need to be aware of, however it is not intended to be a complete list of all rules and regulations contained in the "Minimum Standards."

# APPENDIX D

## NAME, ADDRESS, SYMBOL AND WEBSITE FOR ORGANIZATIONS, ASSOCIATIONS, SOCIETIES AND GOVERNMENT AGENCIES

American Association of State Highway and Transportation Officials (AASHTO)
444 North Capital, Northwest, Ste. 249
Washington, D.C. 20001
www.aashto.org/aashto/home.nsf/FrontPage

American Concrete Institute (ACI)
Post Office Box 4754
38800 Country Club Rd.
Farmington Hills, Michigan 48331
www.aci-int.org/general/home.asp

American Gas Association (AGA)
400 N. Capital Street, NW
Washington D.C. 20001
www.aga.org

American National Standards Institute (ANSI)
1819 L Street, NW Ste. 600
Washington DC, 20036
www.ansi.org

American Society for Testing Materials (ASTM)
100 Barr Harbor Dr.
P.O. Box C700
West Conshohocken, Pennsylvania, 19428
www.astm.org

American Society of Mechanical Engineers (ASME)
22 Law Drive
Fairfield, New Jersey 07007-2300
www.asme.org

American Water Works Association (AWWA)
6666 W. Quincy Avenue
Denver, Colorado 80235
www.awwa.org

American Welding Society (AWS)
550 NW LeJeune Road
Miami, Florida 33126
www.aws.org

Broward County Environmental Protection Department (EPD)
115 S. Andrews Avenue – Rm A-240
Ft. Lauderdale, FL 33301
www.broward.org/environment

Department of Fire Rescue and Emergency Services (DFRES)
2601 W. Broward Blvd.
Ft. Lauderdale, FL 33312
www.sheriff.org/about_bso/dfres

Broward County Highway Construction and Engineering Division (HCED)
1 N. University Dr., Suite 300
Plantation, FL 33324
http://bcegov2.broward.org/bcengineering/index.asp

Broward County Mass Transit Division (BCMTD)
3201 West Copans Road
Pompano Beach, FL 33069
www.broward.org/bct/welcome.htm

Broward County Waste and Recycling Services (BCWRC)
1 N. University Dr., Ste. 400 B
Plantation, FL 33324
www.broward.org/waste

Broward County Traffic Engineering Division (BCTED)
2300 West Commercial Blvd.
Ft. Lauderdale, Fl. 33309
www.broward.org/traffic

# APPENDIX D

## NAME, ADDRESS, SYMBOL AND WEBSITE FOR ORGANIZATIONS, ASSOCIATIONS, SOCIETIES AND GOVERNMENT AGENCIES

Water and Wastewater Services (WWS)
2555 West Copans Road
Pompano Beach, Fl. 33069
www.broward.org/waterservices

Florida Department of Health (FDOH)
4052 Bald Cypress Way
Tallahassee, FL 32399-1701
www.doh.state.fl.us

Florida Department of (FDEP)
Environmental Protection
3900 Commonwealth Blvd,
Tallahassee, FL 32399-3000
www.floridadep.org/admin/contacts.htm

Florida Department of (FDOT)
Transportation District 4
3400 W. Commercial Blvd.
Ft. Lauderdale, FL 33309
www.dot.state.fl.us

Manufacturers Standardization (MSS)
Society of the Valves and Fittings Industry
127 Park Street
Vienna, Virginia 22180
www.mss-hq.com

National Electrical Manufacturers (NEMA)
Association
1300 N. 17th St., Ste. 1877
Rosslyn, Va. 22209
www.nema.org

National Fire Protection (NFPA)
Association
1 Batterymarch Park
Quincy, Massachusetts 02169-7471
www.nfpa.org/catalog/home/index.asp

Occupational Safety & Health (OSHA)
Administration
200 Constitution Ave.,
Washington DC, 20220
www.osha.gov

South Florida Water (SFWMD)
Management District
3301 Gun Club Road
West Palm Beach, FL 33406
www.sfwmd.gov

U.S. Department of (USDOT)
Transportation
400 7th Street, S.W.,
Washington D.C. 20590
www.dot.gov

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Board of County Commissioners
Josephus Eggelletion, Jr. • Ben Graber • Sue Gunzburger
Kristin D. Jacobs • Ilene Lieberman • John E. Rodstrom, Jr.
Jim Scott • Diana Wasserman-Rubin • Lois Wexler

PUBLIC WORKS AND TRANSPORTATION DEPARTMENT
Highway Construction and Engineering Division
1 N. University Drive, Bldg. B, #300
Plantation, FL 33324
954-577-4555
FAX 954-577-2338

## SPECIFIC REFERENCES FORM

Contractor and Subcontractor shall each have a minimum of 5-years' experience constructing water, wastewater or reclaimed water pressure pipelines of the same size diameter or larger, including the same minimum linear footage as the project, or greater linear footage using trenchless technology (horizontal directional drilling or pipe bursting) and open cut methodology. Gravity sewer piping will not be considered as meeting the project experience. The contractor must submit a minimum of three (3) specific municipal project references for the same size diameter or larger diameter utility (water, wastewater, or reclaimed water) pressure piping which have been completed in the last 5 years. Successful installation of the piping is required as well as good references for consideration of performing this project. In addition, the referenced employees as submitted by the contractor are required to be on site through the project construction.

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: Do not include proposed team members or parent/subsidiary companies as references in your submittals.***

**A. PRIME BIDDER'S NAME**:

CLIENT NO.1 - Name of firm to be contacted:

Address:

Contact Person:

Phone No:

Contact E-Mail Address:

Project Performance Period: to

Dates should be in mm/yy format

Project Name:

Location of Project:

Overall Construction Cost:

Description of the overall scope:

Description of work that was self-performed by Bidder:

CLIENT NO.2 - Name of firm to be contacted:

Address:

Contact Person:

Phone No:

Contact E-Mail Address:

Project Performance Period: to

Dates should be in mm/yy format

Project Name:

Location of Project:

Overall Construction Cost:

Description of the overall scope:

Description of work that was self-performed by Bidder:

CLIENT NO.3 - Name of firm to be contacted:

Address:

Contact Person:

Phone No:

Contact E-Mail Address:

Project Performance Period: to

Dates should be in mm/yy format

Project Name:

Location of Project:

Overall Construction Cost:

Description of the overall scope:

Description of work that was self-performed by Bidder:

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.**

**CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT**

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").

2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.

5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Authorized Signature

Print Name and Title

Date

## 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? Include the year, description, and contract value.

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, telephone numbers and e-mail addresses). Include the project name, year, description, and contract value.

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: Engineering Contractor's License #

(County/State)

Expiration Date:

**NOTE: To be considered for award of this contract, the bidder must submit a financial statement upon request.**

**NOTE: Contractor must have proper licensing and shall provide copy of same with his proposal.**

## 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?

# 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)

Date:

Signature

Date:

ITB 12204-293
PROJECT: 12448
TITLE: Annual Sewer Reparis and Replacement

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**ADDENDUM NUMBER 1**

DATE7/1/2019

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The following Addendum is hereby made a part of the Plans and Specifications and shall be included with all contract documents:

Acknowledge receipt of this Addendum by inserting its number and date on the Construction Bid Certification. **All changes are in bold, red italics.**

1. **CHANGE:** **Bid opening has been extended to July 9th, 2019**

All other terms, conditions, and specifications remain unchanged.

*James T. Hemphill*
Senior Procurement Specialist

Company Name: _____
(please print)
Bidder's Signature: _____

Date: _____

# Question and Answers for Bid #12204-293 - Annual Sewer Repairs and Replacement P12448

## Overall Bid Questions

**Question 1**

What's the estimated budget for this project? **(Submitted: May 27, 2019 11:28:40 AM EDT)**

**Answer**

- The estimated budget for this project is $1,000,000.00. **(Answered: May 29, 2019 5:20:38 PM EDT)**

**Question 2**

Will you please provide the annual expenditure for this project? **(Submitted: May 28, 2019 9:04:27 AM EDT)**

**Answer**

- The estimated budget for this project is $1,000,000.00. **(Answered: May 29, 2019 5:20:38 PM EDT)**

**Question 3**

Is a pre bid meeting going to be held? **(Submitted: May 30, 2019 8:57:32 AM EDT)**

**Answer**

- No pre-bid meeting is scheduled currently **(Answered: Jun 5, 2019 5:28:29 PM EDT)**

**Question 4**

We are a new Woman-owned General Construction and Engineering firm that is licensed, bonded, and insured. Our "New" firm is established by executives, supervisors, and other senior field staff (key employees) that will meet and exceed your minimum contractor experience requirements.
RFI:
Will the City of Ft Lauderdale qualify a firm based on verifiable documentation of prior experience of its qualifier, owners, and key employees with previous firms?
As a form of reference we have attached Miami-Dade Water and Sewer Departmentâ€™s qualification language for newly established firms.
â€œIn the event a firm is established by executives, supervisors, and other senior field staff (key employees) that would have met these minimum experience requirements with a prior firm, the County reserves the right to qualify the firm based on the Countyâ€™s sole determination and evaluation of the knowledge and prior experience of these key employees employed by the new firm. The
experience of key senior personnel with other firms may be counted towards the experience requirement, if acceptable to the Engineer. Should such evidence not be satisfactory to the Engineer, whose decision shall be final, the bid will be considered not responsible, and the second lowest bidder will be considered for award. The qualifying proof shall be submitted with the bid.â€ **(Submitted: Jun 3, 2019 5:02:55 PM EDT)**

**Answer**

- The Contractor and/or Subcontractor shall each have a minimum of 5-yearsÃ¢Â€Â™ experience repairing/replacing water, wastewater or reclaimed water pressure/gravity pipelines of
the same size diameter or larger, including the same minimum linear footage as the project, or greater linear footage using open cut methodology, including mainlines, lateral connections, stack singles or double wye lateral installations.
Our construction contract defines 'Contractor' as follows: Ã¢Â€Â“ 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. **(Answered: Jun 14, 2019 12:33:40 PM EDT)**

**Question 5**

Will you please verify that the Supplier ID is the same one the Broward County has for the Surety 2000, figuring that Ft. Lauderdale is within Broward it might be the same. Just want to make sure & not be docked because of a technicality. **(Submitted: Jun 5, 2019 4:24:02 PM EDT)**

**Answer**

- You will need to verify that with BIDSYNC. Not sure how they distribute their Supplier ID's **(Answered: Jun 5, 2019 5:27:20 PM EDT)**

**Question 6**

Will you please provide who was awarded the contract previously as well as their bid submittal & all work orders/costs associated with that contract. **(Submitted: Jun 14, 2019 12:06:39 PM EDT)**

**Answer**

- This would require you to submit a public records request **(Answered: Jul 1, 2019 9:01:50 AM EDT)**