

NOTIFICATION OF ADDENDUM

ADDENDUM NO. 2

DATED 11/30/2007

Control	0918-45-369
Project	STP 97(434)MM
Highway	CS
County	DALLAS

Ladies/Gentlemen:

Attached please find an addendum on the above captioned project. Included in the attachment is an addendum notification which details the changes and the respective proposal pages which were added and/or changed.

Except for new bid insert pages, it is unnecessary to return any of the pages attached.

Bid insert pages must be returned with the bid proposal submitted to the Department, unless your firm is submitting a bid using a computer print out. The computer print out must be changed to reflect the new bid item information.

Contractors and material suppliers, etc. who have previously been furnished informational proposals are not being furnished a copy of the addendum. If you have a subcontractor on the above project, please advise them of this addendum. Acknowledgment of this addendum is not requested if your company has been issued a proposal stamped "This Proposal Issued for Informational Purposes."

You are required to acknowledge receipt of this addendum on the Addendum Acknowledgement form contained in your bid proposal by placing a mark in the box next to the respective addendum.

Failure to Acknowledge receipt of this addendum in your bid proposal will result in your bid not being read.

SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: STP 97(434)MM

CONTROL: 0918-45-369

COUNTY: DALLAS

LETTING: 12/04/2007

REFERENCE NO: 1130

PROPOSAL ADDENDUMS

- PROPOSAL COVER
- BID INSERTS (SH. NO.:)
- GENERAL NOTES (SH. NO.:)
- X SPEC LIST (SH. NO.: 3-3)
- SPECIAL PROVISIONS:
- ADDED:

DELETED:

- X SPECIAL SPECIFICATIONS:
- ADDED: 5504,

DELETED: 5504

- OTHER:

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

SPECIFICATION LIST: REVISED SPECIAL SPEC 5504 TO SHOW ATTACHMENT FOR CITY
OF DALLAS WATER UTILITIES DEPARTMENT

CONTROL : 0918-45-369
PROJECT : STP 97(434)MM
HIGHWAY : CS
COUNTY : DALLAS

TEXAS DEPARTMENT OF TRANSPORTATION

GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF
----- TRANSPORTATION JUNE 1, 2004.
STANDARD SPECIFICATIONS ARE INCORPORATED
INTO THE CONTRACT BY REFERENCE.

ITEMS 1 TO 9 INCL., GENERAL REQUIREMENTS AND COVENANTS
ITEM 100 PREPARING RIGHT OF WAY (103)
ITEM 104 REMOVING CONCRETE
ITEM 110 EXCAVATION (132)
ITEM 132 EMBANKMENT (100) (204) (210) (216) (400)
ITEM 161 COMPOST (160)
ITEM 162 SODDING FOR EROSION CONTROL (166) (168)
ITEM 168 VEGETATIVE WATERING
ITEM 260 LIME TREATMENT (ROAD-MIXED) (105) (132) (204) (210) (216)
(247) (300) (310) (520)
ITEM 360 CONCRETE PAVEMENT (300) (420) (421) (438) (440) (529) (585)
ITEM 416 DRILLED SHAFT FOUNDATIONS (420) (421) (440) (448)
ITEM 500 MOBILIZATION (5010)
ITEM 502 BARRICADES, SIGNS, AND TRAFFIC HANDLING
ITEM 504 FIELD OFFICE AND LABORATORY
ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL
CONTROLS
ITEM 528 COLOR TEXTURED CONCRETE AND LANDSCAPE PAVERS (132) (247)
(420) (421) (440)
ITEM 529 CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER (360)
(420) (421) (440)
ITEM 536 CONCRETE MEDIANS AND DIRECTIONAL ISLANDS (420) (421) (427)
(440) (529)
ITEM 610 ROADWAY ILLUMINATION ASSEMBLIES (421) (441) (442) (445) (446)
(449) (616) (620)
ITEM 618 CONDUIT (400) (445) (476) (622)
ITEM 620 ELECTRICAL CONDUCTORS
ITEM 624 GROUND BOXES (421) (440)
ITEM 628 ELECTRICAL SERVICES (441) (445) (449) (618) (620) (627) (656)
ITEM 644 SMALL ROADSIDE SIGN SUPPORTS AND ASSEMBLIES (421) (440)

(441) (442) (445) (634) (636) (643) (656)
ITEM 662 WORK ZONE PAVEMENT MARKINGS (666) (668) (672) (677)
ITEM 666 REFLECTORIZED PAVEMENT MARKINGS (316) (318) (662) (677) (678)
ITEM 672 RAISED PAVEMENT MARKERS (677) (678)
ITEM 677 ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS (300)
(302) (316)
ITEM 678 PAVEMENT SURFACE PREPARATION FOR MARKINGS (677)
ITEM 680 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (610) (625) (627)
(634) (636) (656)
ITEM 682 VEHICLE AND PEDESTRIAN SIGNAL HEADS
ITEM 684 TRAFFIC SIGNAL CABLES
ITEM 688 PEDESTRIAN DETECTORS AND VEHICLE LOOP DETECTORS (618)
(624) (682) (684)

SPECIAL PROVISIONS: SPECIAL PROVISIONS WILL GOVERN AND TAKE
----- PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED
HEREON WHEREVER IN CONFLICT THEREWITH.

REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS
(FORM FHWA 1273, MARCH, 1994)

WAGE RATES

SPECIAL PROVISION "SCHEDULE OF LIQUIDATED DAMAGES" (000--1002)
SPECIAL PROVISION "PARTNERING" (000---002)
SPECIAL PROVISION "NOTICE TO ALL BIDDERS" (000---003)
SPECIAL PROVISION "NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO
ENSURE EQUAL EMPLOYMENT OPPORTUNITY" (000---004)
SPECIAL PROVISION "DISADVANTAGED BUSINESS ENTERPRISE IN FEDERAL-AID
CONSTRUCTION" (000---461)
SPECIAL PROVISION "STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS" (000---006)
SPECIAL PROVISION "ON-THE-JOB TRAINING PROGRAM" (000--1001)
SPECIAL PROVISION "CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT"
(000---009)
SPECIAL PROVISION "DEPARTMENT DIVISION MAILING AND PHYSICAL ADDRESS"
(000---011)
SPECIAL PROVISION TO ITEM 1 (001---005)
SPECIAL PROVISION TO ITEM 3 (003---020)
SPECIAL PROVISION TO ITEM 4 (004---008)
SPECIAL PROVISION TO ITEM 5 (005---004)
SPECIAL PROVISION TO ITEM 6 (006---030)
SPECIAL PROVISIONS TO ITEM 7 (007---213) (007---297)
SPECIAL PROVISION TO ITEM 9 (009---009)
SPECIAL PROVISION TO ITEM 100 (100---001)
SPECIAL PROVISION TO ITEM 161 (161---001)
SPECIAL PROVISION TO ITEM 166 (166---001)
SPECIAL PROVISION TO ITEM 247 (247---020)
SPECIAL PROVISION TO ITEM 260 (260---001)
SPECIAL PROVISION TO ITEM 360 (360---003)
SPECIAL PROVISION TO ITEM 400 (400---004)
SPECIAL PROVISION TO ITEM 416 (416---001)
SPECIAL PROVISION TO ITEM 420 (420---003)
SPECIAL PROVISION TO ITEM 421 (421---024)

SPECIAL PROVISION TO ITEM 440 (440---001)
SPECIAL PROVISION TO ITEM 441 (441---002)
SPECIAL PROVISION TO ITEM 442 (442---005)
SPECIAL PROVISION TO ITEM 465 (465---001)
SPECIAL PROVISION TO ITEM 500 (500---002)
SPECIAL PROVISION TO ITEM 502 (502---022)
SPECIAL PROVISION TO ITEM 506 (506---011)
SPECIAL PROVISION TO ITEM 620 (620---001)
SPECIAL PROVISION TO ITEM 625 (625---001)

SPECIAL SPECIFICATIONS:

ITEM 5010 TRANSPORTABLE CELLULAR TELEPHONES
ITEM 5504 WATER MAINS AND WASTEWATER APPURTENANCES
ITEM 5516 CURB INLET SEDIMENT CONTROL DEVICE
ITEM 6086 PREPARATION OF EXISTING CONDUITS, GROUND BOXES, OR
MANHOLES (465) (618) (624)

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH
----- PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER
PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE-
LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL
PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFI-
CATIONS FOR THIS PROJECT.

SPECIAL SPECIFICATION**5504****Water Mains and Wastewater Appurtenances**

- 1. Description.** This Item governs the furnishing and installing of all materials, equipment, and labor listed in the "Specifications for Water Mains and Wastewater Appurtenances" for the widening project at Elam Road in Dallas County, herein known as the document, and all materials shown on the plans. The originator of the document is the Water Utilities Department for the City of Dallas. Their address is: Dallas Water Utilities Department, 2121 Main Street, Room #500, Dallas, Texas 75201, Telephone (214) 671-9523.
- 2. Materials.** Materials should conform to the requirements of the document, this specification, and the plans.
- 3. Construction.** The Contractor should perform the work in a manner consistent with the document (Section A - Water Utilities Special Provisions and Bid Items, Part T - Technical Specifications) and the following Specifications, Addendums, and Standards necessary to perform the work:
 - A.** The General specifications (Standard specifications for Public Work Construction – North Central Texas - Second Edition - 1987 including all amendments OR First Edition- 1983 including all amendments).
 - B.** Dallas Water Utilities Addendum to North Central Texas Standard Specifications for Public Works Construction - Dec. 1998.
 - C.** City of Dallas, Water Utilities Department Standard Drawings - May 1, 1998.
 - D.** Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, effective January 2, 1990.
 - E.** A copy of the Standard Specification for Public Works Construction may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Arlington, Texas, Telephone (817) 640-3300.
 - F.** A copy of the Dallas Water Utilities Addendum to the General Specifications can be obtained at the Dallas Water Utilities Department, 320 East Jefferson, Room 118, Dallas, Texas 75203, Telephone (214) 948-4500.
- 4. Measurement.** This Item will be measured as follows and as explicitly detailed in the document:
 1. Rehabilitation of Existing 12” Wastewater Main – foot.
 2. Point Repair of 12” Wastewater Main – foot.

3. Point Repair of 15" Wastewater Main – foot.
4. Removal of Internal Obstruction for Wastewater Main – each.
5. Pipe Bursting (12" to 12") – foot.
6. Pipe Bursting (15" to 15") – foot.
7. Water Service – each.
8. Wastewater Lateral – each.
9. External Wastewater Lateral Connection (Pipe Bursting) – each.
10. Internal Wastewater Lateral Connection (Rehab.) – each.
11. 48" Wastewater Manhole – each.
12. 48" Wastewater Manhole with Paving – each.
13. 60" Wastewater Manhole with Paving – each.
14. Vacuum Test for Wastewater Manhole – each.
15. Television Inspection – foot.
16. Flowable Backfill – cubic yard.
17. Temporary Paving (Hot or High Performance Mix) – ton.
18. Reinforced Concrete Paving – cubic yard.
19. Silt Fence – foot.
20. Disposal of Heavily Chlorinated Water Main Flushing Water – each.
21. Adjustment of Water Valve Covers and Valve Stacks – each.
22. Adjustment of Wastewater Manhole with 24" Lid – each.
23. Investigation – each.
24. Alter Water Valve Covers and Valve Stacks – each.
25. Relocate Type 1 Air Release Valve – each.

5. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit prices bid for the various items of work. These prices are full compensation for furnishing all labor, tools, equipment, and incidentals necessary to satisfactorily complete the work prescribed in the document and as detailed on the plans.

**SPECIFICATIONS
FOR
WASTEWATER MAIN REHABILITATION
AND ROUTINE WATER
AND WASTEWATER MAIN
APPURTENANCE ADJUSTMENTS
FOR
ELAM ROAD FROM
SAINT AUGUSTINE ROAD
TO ACRES DRIVE
CONTRACT NO. 07-013F / 07-014F**

**water utilities department
CITY OF DALLAS, TEXAS**

SECTION C- WATER UTILITIES SPECIAL PROVISIONS AND BID ITEMS

C 1. Location and Description of Project

C 2. Special Provisions

C 3. Bid Items

C 4. Specifications

PART T - TECHNICAL SPECIFICATIONS

C 1. LOCATION AND DESCRIPTION OF PROJECT

This project consists of:

1. A 12-inch and 15-inch wastewater main by rehabilitation methods in Elam Road from the proposed manhole at Cassidy Drive; thence in an easterly direction approximately 5,100 linear feet to end at proposed manhole at Cheyenne Road.
2. The routine water and wastewater main appurtenance adjustments in Elam Road from Saint Augustine Road to Acres Drive.

For details of locations and construction see 411Q, 1635, sheets 174 thru 186 and the applicable Standard Drawings.

C 2. SPECIAL PROVISIONS

S-1 EXISTING MAINS AND SERVICES

ACCIDENTAL DAMAGE:

DALLAS WATER UTILITIES (DWU) DISPATCHER (214) 670-5700

All water and wastewater facilities must be protected during all phases of the construction operations. The Contractor is responsible for the cost to repair damage to existing water or wastewater main, water services, and/or wastewater laterals. Repairs will be made by DWU and the Contractor will be billed for the cost of the repair. The Contractor will not be permitted to make repairs unless authorized by the Engineer.

Damage to other DWU facilities will be repaired by the Contractor, if repair is authorized by the Construction Engineer. If repair is not authorized by the Construction Engineer, the repair will be made by DWU and the Contractor will be billed for the cost of the repair. If such damage occurs the Contractor is to call the DWU dispatcher for repairs.

THE CONTRACTOR IS NOT ALLOWED TO OPERATE WATER VALVES IN THE EXISTING SYSTEM. In the event of damage to a water facility that requires closing a water valve in the existing system, the Contractor must contact the DWU dispatcher. DWU personnel will shut off the valve.

In the event a live water service is damaged or cut, the Contractor must immediately crimp the service to stop flow. IMMEDIATELY, the Contractor is to call the DWU dispatcher for repairs.

PLANNED ALTERATION:

If the Contractor plans to damage, cut, or alter the existing system in any manner, the means and methods must be approved by the DWU Construction Engineer. Any work done and materials used or disposed of, related to this item, shall be at no cost to the City. Also, if the DWU Construction Engineer disapproves any means or methods requested by the Contractor, this will not constitute the basis of any claim for additional costs to the City.

The Construction Engineer shall have the authority to approve one or more of the following methods or other methods requested by the Contractor:

Temporary Main: If a temporary main is required to accomplish continuous water service, or if a temporary main is required to accomplish continuous wastewater service or if a wastewater pumping bypass operation is used, the work will be done by the Contractor at his expense.

This shall include furnishing all labor, tools, materials, equipment, and incidentals necessary to complete the work, including all excavation and disposal of surplus material, transfer of services back to the existing system, and protection and repair of the temporary system. The means, methods, materials and size must be approved by the Engineer. Any wastewater pumping bypass operation must also be approved by the Engineer; including the size and type of pump. The Engineer will determine if a standby pump is required and if the pump(s) must be manned during non-working hours.

Bullhead: Temporary services to several residences made off one existing service.

Cut Water Service: The service shall not be intentionally cut if the resident or business proprietor objects to discontinued service. In no case will the service be cut for more than four (4) hours unless prior approval is obtained from the Construction Engineer and the resident or proprietor. The Contractor is responsible to coordinate this effort.

Repair will be made by the method approved by the Construction Engineer. The methods shall be:

1. Remove the water service to a point one foot outside the ditch line on both sides. Use new copper pipe of the same size to replace the removed section.

The connection nearest the main shall be made with a compression connection coupling. The connection nearest the meter will be made with a compression x compression curb stop or compression curb stop w/compression x O.S.I.P. coupling.

2. Install and connect a new copper pipe from the existing corporation cock on the main to the meter.

Cut Wastewater Service: Repair shall be made as shown on Page G 4.1 of the Dallas Water Utilities Drawings, Details, & Standard Appurtenances for Water and Sanitary Sewer Construction Methods.

S-2 **WATER AND WASTEWATER INFRASTRUCTURES AND APPURTENANCES**

Identified water and wastewater infrastructures will be altered, replaced, constructed and/or abandoned by the Contractor. Water and wastewater appurtenances encountered will be adjusted by the Contractor to permit construction and conform to the finished grades on the project.

All materials and workmanship shall be in accordance with the North Central Texas Council of Governments Standard Specifications for Public Works Construction (NCTCOG), the DWU Addendum to the NCTCOG Specifications, DWU Drawings, Details & Standard Appurtenances, DWU Special Details, and the details shown on Paving Standard Drawing 251D-1.

The work associated with water and wastewater facilities will be accomplished in generally three phases. Phase one will be accomplished in advance of grading operations which may include lowering existing appurtenances, repairing, lowering, or constructing portions of the existing water and/or wastewater mains, rebuilding laterals and/or water services to clear proposed storm sewer or other proposed facilities, relocating water services, meter boxes and meters, adjusting or constructing lateral cleanouts, constructing new laterals and/or water services that are in a deteriorated condition or constructed of a material that is identified to be replaced, and other work identified on the plans or outlined in the contract documents.

Phase two will be accomplished prior to paving operations, which includes adjustment of appurtenances to the final paving grade.

The last phase is the final inspection of the work to coincide with the final paving inspection.

The unit price bid for each pay item will include all costs to bring the specified appurtenance to finished line and grade, set in permanent location, and being fully operational at the time of completion of the project. The contract unit price for each item will be full compensation for removal and salvage of the existing appurtenance, for all required cleaning before reinstallation, for all cutting or rebuilding necessary to match the finished grade of the paving or grading, for replacement of all damaged or lost parts, for protecting facilities to assist continuous and uninterrupted service, and for all material, labor, and equipment costs to satisfactorily complete the adjustments to the intent of the plans and specifications. All facilities must be completed to new construction standards in accordance with the NCTCOG Standard Specifications, and be fully operational at the time of final inspection of the completed project.

The proposal price bid for pay items covered in this Special Provision for adjustment to water and wastewater appurtenances will not be subject to renegotiation due to quantity overrun or underrun limitations as set forth in Section 1.37.1 of the NCTCOG Standard Specifications for Public Works Construction.

S-3 **FINAL PAVING INSPECTION**

The Contractor or Sub-Contractor utilized to install the water mains shall accompany the Engineer on the Final Paving Inspection.

S-4 **QUANTITIES**

The quantities in the Bid Items are approximate and may represent quantities in excess of those actually installed. Payment will be based on the actual quantities installed and paid in accordance with the applicable Specifications.

S-5 **NOTIFICATION OF CONSTRUCTION OPERATIONS**

The **Contractor** shall be responsible for all Construction Staking associated with the Water and Wastewater Facilities on this project. Staking shall be performed by qualified personnel. Typed Cut Sheets must be submitted to DWU Surveying and Mapping Attn: Robert Preddy, 320 E. Jefferson Boulevard, Room 215, Dallas, Texas 75203 (Phone - 214-948-4584; Fax- 214-948-4599) no later than 3:00PM the day prior to scheduled start of construction. (See example in Part T - Technical Specifications).

The Contractor is responsible for maintaining all staked controls and hubs in the construction area at all times and any costs for re-staking or re-establishing controls required shall be borne by the Contractor.

Inspection of work associated with the water and wastewater facilities will be done by Dallas Water Utilities. Inspection shall be requested three (3) days prior to the scheduled start of construction, phone (214) 670-8186.

S-6 **TELEVISION INSPECTION**

A Television Inspection of the installed wastewater main(s) will be made after the backfill is compacted in place and at a time directed by the Engineer. If, in the opinion of the Engineer, there is a potential for movements, settlement, or damage to the main for any reason, the television inspection may be delayed up to 30 calendar days after the backfill operations.

A second Television Inspection of the installed wastewater main shall be conducted at a time as directed by the Engineer. Generally, compaction operations are complete including subgrade preparation and installation of the subbase and base course, but prior to placement of the final paving surface. See Part T – Technical Specifications.

S-7 **TEMPORARY PAVING**

The Contractor is responsible to place, maintain, and remove all temporary paving required for the project. If, in the opinion of the Engineer, the temporary paving placed by the Contractor is not adequate, either in placement or maintenance of the work, the Engineer shall require specific correction, which shall be performed by the Contractor at no additional cost to the City.

Temporary paving will be placed over the compacted backfilled ditches and adjacent disturbed pavement areas and any other location on or adjacent to the project to insure that traffic is maintained over a safe, weatherproof, and evenly graded surface. The temporary paving shall consist of a minimum of two inches of cold mix asphalt pavement conforming to Item 2.4.13 of the specifications or two inches of hot mix asphalt pavement conforming to Item 2.4.15 of the specifications. The Contractor shall determine if additional material is required to support the temporary pavement such as flexible base, lime treated base, crushed rock base, additional thickness of hot/cold asphalt pavement or other measures to insure the temporary pavement is adequate for the purpose designed. The temporary pavement may not be deleted from any portion of the work unless approved, in advance, by the Engineer.

Temporary surfaces shall be adequately compacted and sealed to prevent degradation of the repair during the temporary period. Any temporary surface that fails to provide an acceptable riding surface shall be repaired or removed and replaced, as directed by the Engineer, at the Contractor's expense.

S-8 **APPROVED MATERIALS BY TRADE NAME**

The Owner maintains a list of approved materials by trade name as shown in **Part-T** of these Specifications. The Contractor can furnish materials from this list without a formal written submittal process. However, the Contractor is not bound to the use of these particular brand name materials and can propose "Equals", providing he follows the formal written submittal process outlined in Part-T of these Specifications and obtains the Owner's final written approval of "Equal" substitutions.

S-9 **WASTEWATER MANHOLE FRAME SEALS**

All newly constructed Wastewater Manholes shall include an Internal Frame Seal as specified in the Technical Specifications. All costs for furnishing and installing the seal and extensions shall be included in the applicable Unit Price bid for Wastewater Manholes.

S-10 **RAVEN COATING FOR NEW MANHOLES**

All proposed Wastewater Manholes require Raven Coating 405 or approved equal as stipulated in the Technical Specifications. No Separate Pay Item.

S-11 **WASTEWATER MANHOLE ADJUSTMENTS**

The built-up section to adjust wastewater manholes to grade must be accomplished using precast concrete grade rings and non-shrink grout only. Brick and non-shrink grout in the NCTCOG Specifications Item 6.7.2 (I) (1) are **not** permitted for this adjustment.

S-12 **REHABILITATION ADJACENT TO NEW MANHOLES**

The Contractor shall not construct new manholes until Pipe Bursting has been completed.

S-13 **POINT REPAIRS**

The Contractor is advised that point repairs may be required on private property. Point repairs on private property shall be hand excavated using small equipment to cause as little damage as may be necessary to accomplish the work. If fences must be removed to accomplish the work, the Contractor shall install temporary fencing of like size and construction until permanent fence replacement is accomplished.

The Contractor shall backfill around and a minimum of 12" above top of pipe with Modified Flowable Backfill in accordance with NCTCOG Item 2.1.5(f). The Contractor shall restore all disturbed areas to pre-construction condition. All restoration including, but not limited to, fence replacement, grass sodding, and shrub and flower replacement shall be incidental to **Bid Item Numbers 354D and 354E**.

S-14 **DISPOSAL OF HEAVILY CHLORINATED WATER MAIN FLUSHING WATER**

The Contractor will install blow-offs at locations and sizes as shown on the Storm Water Pollution Prevention Plan (SWP3) or as directed by the Owner.

Preliminary Flushing. Before being chlorinated, the main(s) shall be filled to eliminate air pockets and shall be flushed to remove particulates. The flushing velocity in the mains shall not be less than 2.5. ft/s unless the Owner determines that conditions do not permit the required flow to be discharged to

waste. Flushing is no substitute for preventive measures during construction. Certain contaminants, such as caked deposits, resist flushing at any feasible velocity. In mains of 24-inch diameter and larger, an acceptable alternate to flushing is to broom-sweep the main, carefully removing all sweepings prior to chlorinating the main.

Required Flow and Opening to Flush Pipelines at 40 psi Pressure

Pipe Dia.	Flow required 2.5 ft/sec (In)	Flow required (gpm)	Size of Tap 1" - 1 ½" - 2"	Number of Taps On Pipe		Number of 2-1/2" Hydrant Outlets
4	100	1	-	-		1
6	200	-	1	-		1
8	400	-	2	1		1
10	600	-	3	2		1
12	900	-	-	2		2

Chlorination. The Owner shall chlorinate the mains(s) in accordance with AWWA Standard C651a-90, Disinfecting Water Mains, as modified by the Dallas Water Utilities at no cost to the Contractor. The mains shall be chlorinated by one of two procedures; the Slug Method (usually used on large mains) or the Continuous-Feed Method.

Continuous-Feed Method. Chlorine shall be added near the source of an existing potable water main and will continue until the entire main is filled with heavily chlorinated water. The chlorinated water shall remain in the mains(s) for a minimum of 24 hours.

Slug Method. A high concentration of chlorine is added to one point in the system (called a slug) and slowly moved through the system so that all parts of the system are exposed to the highly chlorinated water for a period of not less than 3 hours.

Flushing. After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with the pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until the chlorine measurements show that the concentration in the water leaving the main is no higher than 4 mg/L. If the Continuous-Feed Method is used, the mains will be flushed a minimum of 24 hours.

Disposal of Flushing Water. The Contractor shall be responsible to dispose of the water used to flush the heavily chlorinated water from the main. The Contractor may use one of four methods to dispose of the heavily chlorinated water. The method must be approved by the Owner. **NOTE: The Contractor Is Not Permitted To Operate Valves In The System.** If valve operations are required during the flushing operation, they must be done by a Representative of the Owner.

1. A reducing agent shall be applied to the water to be wasted to neutralize the chlorine residual to a maximum of 4 mg/L. The water may then be discharged into the storm sewer or waterway.
2. The water may be discharged into an existing wastewater system provided the Owner's Wastewater Collection Division has determined the existing system is capable of handling the additional flow at the planned point of input. A device must be used at the discharge point into the wastewater system that assures it is not possible to get backflow into the water system. As a minimum, there will be an 8-inch air gap from the end of the discharge hose to the wastewater system. The Contractor is responsible to furnish and install any hose(s) to connect to the blow-off which is run to the wastewater system and proper barricades, warning devices, and/or flagmen to protect the public. The discharging of water must be monitored on-site at all times to ensure no backup or flooding of wastewater system occurs.
3. The water may be loaded into a tanker and transported to an existing wastewater system for discharge provided the Owner's Wastewater Collection Division has determined the existing system is capable of handling the additional flow at the planned point of input; or a reducing agent shall be applied to the water to be wasted to neutralize the chlorine residual to a maximum of 4 mg/L either in the tanker or a point offsite and the water discharged into the storm sewer or a waterway. Discharge into the wastewater system from a tanker will be gravity flow only and not pumped.

4. The water may be discharged into a catch basin provided the basin has a capacity to hold the entire discharge and will not overflow during a rain event. The water may then be discharged into a waterway or storm sewer from the catch basin once the chlorine residual is at or below 4 mg/L either by evaporation and/or dilution.

Sampling. The Contractor shall remove the flushing hose(s) from the blow-off after flushing is complete. The Owner will obtain a sample(s) from the blow-off(s) for bacteriological analysis. If the sample is acceptable, the system shall be placed in service by the Owner. If the sample is not acceptable, the Owner will direct the system be re-chlorinated, flushed, or drained and cleansed on the inside, or a combination of any of these procedures. If the main is re-chlorinated, the Contractor is responsible to dispose of the heavily chlorinated water as outlined above.

Indemnification. The Contractor shall fully comply with all Local, State and Federal laws, codes, ordinances and regulations applicable to the discharge of polluted water, which exist or which may be enacted later by governmental bodies having jurisdiction or authority for such enactment. The Contractor and his sureties shall indemnify, defend and save harmless the Owner and all its officers, agents and employees from all suits, actions, fines, or claims of any character, names and description brought for or on account of operations of the Contractor, his agents, employees or subcontractors; or on account of Federal Clean Water Act and related applicable Local, State, and Federal laws, codes, ordinances and regulations.

This is a lump sum item and payment shall be based on the percentage of construction for complete, in place, maintained, removed, accepted work and equipment necessary to dispose of the heavily chlorinated water main flushing water after sterilization or re-sterilization.

C 3.

BID ITEMS

ITEM NO. 352D

REHABILITATION OF EXISTING 12" WASTEWATER MAIN

This item consists of the Rehabilitation of approximately **260** Linear Feet of 12" Wastewater Main in accordance with Part T - Technical Specifications. This item to include all labor, materials, equipment, barricading, and incidentals required to complete the rehabilitation of the wastewater main in accordance with these specifications and addenda thereto.

Measurement shall be the actual Linear Footage of main rehabilitated. Payment shall be at the contract Unit Price per Linear Foot complete in place.

ITEM NO. 354D

POINT REPAIR OF 12" WASTEWATER MAIN

This item consists of **20** point repair set-up to facilitate the rehabilitation process of the 12-inch wastewater main.

This item to include all labor, materials, equipment, and incidentals required to complete the repairs; including, but not limited to: excavation, trench safety and support, barricading, furnishing and installing pipe material, connection to existing main, by-pass pumping, and all backfill and embedment materials. This shall be a **contingent item** and shall only be used if directed by the Construction Engineer. Each point repair set up shall be up to twenty (20) linear feet long. Payment shall be at the contract Unit Price per each set-up complete in place and accepted.

ITEM NO. 354E

POINT REPAIR OF 15" WASTEWATER MAIN

This item consists of **20** point repair set-up to facilitate the rehabilitation process of the 15-inch wastewater main.

This item to include all labor, materials, equipment, and incidentals required to complete the repairs; including, but not limited to: excavation, trench safety and support, barricading, furnishing and installing pipe material, connection to existing main, by-pass pumping, and all backfill and embedment materials. This shall be a **contingent item** and shall only be used if directed by the Construction Engineer. Each point repair set up shall be up to twenty (20) linear feet long. Payment shall be at the contract Unit Price per each set-up complete in place and accepted.

ITEM NO. 355A**REMOVAL OF INTERNAL OBSTRUCTIONS FOR
WASTEWATER MAINS**

This item consists of the Removal of **1** Each Internal Obstruction in an Existing Wastewater Main without excavation.

This item to include all labor, materials, equipment and incidentals required to complete the removal of obstructions; including, but not limited to: trench safety and support, barricading, by-pass pumping, identifying and locating obstructions, providing and operating specialized cutting and removal equipment and disposal of debris. This item includes only those obstructions and blockages that are not removed in accordance with the Technical Specifications for Wastewater Main Cleaning. This shall be a **contingent item** and shall only be used if directed by the Project Manager, in writing. The provisions of Item 1.37.1 of the specifications related to over and under runs do not apply to this item.

Measurement and payment will be per Each obstruction removed. Two or more obstructions shall be considered as one item for payment purposes if they are separated by less than 3' and can be removed with the same equipment setup.

ITEM NO. 357F**PIPE BURSTING OF EXISTING 12" WASTEWATER MAIN
WITH 12" WASTEWATER MAIN**

This item consists of Pipe Bursting approximately **2,790** Linear Feet of 12" Wastewater Main with 12" Wastewater Main in accordance with Part T - Technical Specifications. This item to include all labor, materials, equipment, barricading, and incidentals required to complete the pipe bursting replacement of the wastewater main in accordance with these specifications and addenda thereto.

Measurement shall be the actual Linear Footage of main replaced. Payment shall be at the contract Unit Price per Linear Foot complete in place.

ITEM NO. 357H**PIPE BURSTING OF EXISTING 15" WASTEWATER MAIN
WITH 15" WASTEWATER MAIN**

This item consists of Pipe Bursting approximately **2,050** Linear Feet of 15" Wastewater Main with 15" Wastewater Main in accordance with Part T - Technical Specifications. This item to include all labor, materials, equipment, barricading, and incidentals required to complete the pipe bursting replacement of the wastewater main in accordance with these specifications and addenda thereto.

Measurement shall be the actual Linear Footage of main replaced. Payment shall be at the contract Unit Price per Linear Foot complete in place.

ITEM NO. 505AA**WATER SERVICE**

This item consists of furnishing and placing approximately 1 Each Water Service on an existing or new water main. This item includes all sizes of water services, 3/4" through 2", water meter boxes and meters, 5/8" through 2". This item does not include Commercial Water Meter Vaults. This item includes tapping of the existing or new water main, removing the existing meter box and lid and old service line and replacing with a new meter box and lid, transferring the water service to the meter, and installing a new service line from the new meter box to the property line in accordance with Item 6.7.3.(o) of these specifications and addenda thereto, and the applicable Drawings and Standard Appurtenance Sheets.

The new meter box and lid shall be replaced to the proper grade and relocated to the correct location on a sand cushion. The disturbed area around the meter box will be replaced with sod in accordance with Item 3.9, or concrete in accordance with Item 8.3 to match the existing surface. If the meter is determined by the Project Manager to be defective, it will be replaced with a new meter, furnished by the City. This bid item will also be utilized to provide a water service to a vacant lot where no meter transfer is involved. It will be the Contractor's responsibility to relocate the existing backflow prevention devices on the existing water service between the meter and property line to a proper location as directed by the Project Manager. Should any additional services be found necessary, they will be added to the contract at the same Unit Price. Likewise, should any of the listed services not be necessary, they will be removed from the contract without having any effect on the Unit Price. The provisions of Paragraph 1.37.1 of the specifications regarding negotiating for revised consideration for over/underruns do not apply to this item.

Measurement and payment will be in accordance with Item 6.7.3.(o)(2) of these specifications and will include any costs for pipe, copper, equipment, materials and labor, all boring, tapping, crossing diagonal utilities, costs for barricading, trench safety and support for these services, encasement, embedment, and all temporary and permanent paving related items (saw-cut, base, asphalt, concrete, sidewalk, driveways, curb and/or gutter, sod), and all other work associated with this item.

This shall be a **contingent item** and shall only be used if directed by the Construction Engineer.

ITEM NO. 606A**WASTEWATER LATERAL**

This item consists of furnishing and placing approximately 1 Each Wastewater Lateral on an existing or new wastewater main. This item will include street, alley, and easement laterals with cleanouts, with or without caps in accordance with Item 6.7.2.(h)(7) of these specifications and addenda thereto, and the applicable Drawings and Standard Appurtenance Sheets.

Laterals will be replaced with the same size and type as the existing lateral or as indicated on the plans, with a minimum of 6" diameter pipe required. This item will include, if required, Polyvinyl Chloride Pressure Rated Laterals conforming to ASTM D2241 (DR 26), minimum pressure rating of 160 PSI and ASTM D3139 joints. If a deep cut connection is required, the costs will be included in this item.

The replacement shall include removal of the existing lateral, plugging the existing lateral near the main, installing a new lateral with cleanout by removing a portion of the existing main, installing a wye, connecting to the existing main with adapters for 6" and 8" mains and by tapping mains 10" and larger, installing a new lateral with cleanout and connection to the existing house lateral. Should a private wastewater lateral not exist, a wastewater mainline lateral shall be installed with a cleanout and cap, or a cap only as indicated on the plans. The disturbed area around the cleanout will be replaced with sod in accordance with Item 3.9, or concrete or asphalt in accordance with Item 8.3 to match the existing surface. The Contractor shall furnish a cleanout casting if lost, stolen, or damaged due to Contractor's negligence. Should any additional laterals be found necessary, they will be added to the contract at the same Unit Price. Likewise, should any of the listed laterals not be necessary, they will be removed from the contract without having any effect on the unit price. The provisions of Paragraph 1.37.1 of the specifications regarding negotiating for revised consideration for over/underruns do not apply to this item

Measurement and payment will be in accordance with Item 6.7.2.(h)(8) of these specifications, and will include any costs for pipe, equipment, materials and labor, deep cut connections, all boring, encasement, crossing diagonal utilities, costs for barricading, trench safety and support for these laterals, embedment, and all temporary and permanent paving related items (saw-cut, base, asphalt, concrete, sidewalk, driveways, curb and/or gutter, sod) and all other work associated with this item.

This shall be a **contingent item** and shall only be used if directed by the Construction Engineer.

ITEM NO. 607A**EXTERNAL LATERAL CONNECTION**

This item consists of the reinstatement of approximately **38** Each External Lateral Connection in accordance with Part T - Technical Specifications.

All wastewater lateral services shall be reinstated within 24 hours of beginning the lining process. The external live laterals shall be reinstated by excavating the existing connection and connecting lateral.

This item is completed as each and is to include all labor, materials, equipment, barricading, embedment, clean out, backfilling and incidentals required to complete the reinstatement of the laterals in accordance with these specifications and addenda thereto.

Measurement and payment will be per Each complete in place.

ITEM NO. 607B**INTERNAL LATERAL CONNECTION**

This item consists of the reinstatement of approximately **1** Each Internal Lateral Connection in accordance with Part T - Technical Specifications.

All wastewater lateral services shall be reinstated within 24 hours of beginning the inversion or lining process. The existing live laterals shall be reinstated by using an interior cutting device and television camera from within the wastewater main. The cutter shall reinstate each connection to not less than 90% capacity.

This item complete and to include all labor, materials, equipment, barricading, and incidentals required to complete the reinstatement of the laterals in accordance with these specifications and addenda thereto.

Measurement and payment will be per Each complete in place.

ITEM NO. 613A**48" DIAMETER WASTEWATER MANHOLE**

This item consists of furnishing, placing, and Epoxy Coating approximately **8** Each 48" Diameter Manhole in accordance with Item 6.7.2.(i) of these specifications and addenda thereto, and the applicable Standard Appurtenance Sheets.

Removal of any existing conflicting manhole, if required, will be included in this item. Nonshrink grout and precast concrete grade rings shall be used for adjustments of the ring and cover. This item is to include Wastewater Manhole Frame Seals for each manhole installed (see Technical Specifications). This item shall also include trench safety, backfill, foundation and barricades.

Measurement and payment will be in accordance with Item 6.7.2.(i)(3) of these specifications.

ITEM NO. 613AP 48" DIAMETER WASTEWATER MANHOLE WITH PAVING

This item consists of furnishing, placing, and Epoxy Coating approximately **4** Each 48" Diameter Manhole in accordance with Item 6.7.2.(i) of these specifications and addenda thereto, and the applicable Standard Appurtenance Sheets.

Removal of any existing conflicting manhole, if required, will be included in this item. Nonshrink grout shall be used in place of mortar. This item shall also include trench safety, backfill, foundation, barricading, all temporary and permanent paving, and paving related items (removal, disposal, replacement, saw-cut, base, asphalt, concrete, sidewalk, driveways, curb and/or gutter, sod, seed, etc.).

Measurement and payment will be in accordance with Item 6.7.2.(i)(3) of these specifications.

ITEM NO. 613BP 60" DIAMETER WASTEWATER MANHOLE WITH PAVING

This item consists of furnishing, placing, and Epoxy Coating approximately **2** Each 60" Diameter Manhole in accordance with Item 6.7.2.(i) of these specifications and addenda thereto, and the applicable Standard Appurtenance Sheets.

Removal of any existing conflicting manhole, if required, will be included in this item. Nonshrink grout shall be used in place of mortar. This item shall also include trench safety, backfill, foundation, barricading, all temporary and permanent paving, and paving related items (removal, disposal, replacement, saw-cut, base, asphalt, concrete, sidewalk, driveways, curb and/or gutter, sod, seed, etc.).

Measurement and payment will be in accordance with Item 6.7.2.(i)(3) of these specifications.

ITEM NO. 614B VACUUM TEST FOR WASTEWATER MANHOLE

This item consists of performing approximately **14** Each Vacuum Test for Wastewater Manhole in accordance with Item 6.7.2.(c) of The Dallas Water Utilities Addendum to the Standard Specifications.

This item shall include all materials, equipment, labor, and incidentals required to complete the test as specified. This item is a **contingent item** and payment will be made only if directed by the DWU Construction Superintendent. Should any of the listed tests not be necessary, they will be removed from the contract without having any effect on the Unit Price.

Measurement and payment shall be in accordance with Item 6.7.2.(e) of these specifications and addenda thereto.

ITEM NO. 692A TELEVISION INSPECTION

This item consists of performing a Television Inspection on approximately **5,090** Linear Feet of Wastewater Main in accordance with Item 6.7.2.(c) of the DWU Addendum to the Standard Specifications for Public Works Construction.

Payment will be allowed only for inspections made to a particular section of main in accordance with Item 6.7.2(c)(10) of the DWU Addendum to the Standard Specifications for Public Works Construction.

ITEM NO. 704B FLOWABLE BACKFILL

This item consists of furnishing and placing approximately **20** Cubic Yards of Flowable Backfill in accordance with Items 6.2.10.(g) and 2.1.5.(e) of these specifications and addenda thereto.

This is a **contingent item** and placement shall be made only as directed by the Project Manager.

Measurement and payment shall be at the contract Unit Price per Cubic Yard for completed and accepted work.

ITEM NO. 752A TEMPORARY PAVING (HOT MIX OR HIGH PERFORMANCE MIX)

This item consists of furnishing, placing, and removing approximately **10** Tons of Hot or High Performance Mix Asphalt Pavement for Temporary Paving, as authorized by the Engineer. Hot Mix Asphalt shall conform to Items 2.4.13 and 2.4.15 of these specifications. Hot or High Performance Mix shall be placed in accordance with Items 6.5.2 and 5.7 of these specifications and addenda thereto.

The method of measurement for payment will be in Tons (2,000 pounds) of material in place and accepted. The basis of payment will be based on the maximum permissible width of ditch as specified for type or kind of conduit to be constructed as shown on the plans or Standard Appurtenance sheet, and a compacted thickness of 2" over flexible base.

ITEM NO. 757 REINFORCED CONCRETE PAVING

This item consists of furnishing and placing approximately **20** Cubic Yards of Reinforced Concrete Paving in accordance with Items 6.5.2.(c), 2.1, 2.2, and 5.8 of these specifications and addenda thereto.

This item shall also include removal and disposal of existing pavement, if it lies outside of trench width plus two feet.

Measurement and payment will be in accordance with Items 6.5.2 and 6.5.3 of these specifications.

ITEM NO. 771A**SILT FENCE**

This item consists of furnishing and placing approximately **100** Linear Feet of Geotextile Silt Fence in accordance with Item 2.23.4 and the detail sheet included in Part T - Technical Specifications.

This item to include the installation, maintenance, and removal of silt fence. Replacement of silt fence, if it is determined to be ineffective by the Engineer, will be at no additional cost to the City.

The bid price for this item will not be subject to renegotiation due to quantity overrun or underrun limitations as set forth in the Specifications.

Measurement and payment will be in Linear Feet measured along the centerline of the fence and will include all materials and labor to install, maintain, and remove silt fence. Materials that are removed and reinstalled at another location will be paid, provided that the materials are in a satisfactory condition as determined by the owner.

ITEM NO. 773A**DISPOSAL OF HEAVILY CHLORINATED WATER MAIN FLUSHING WATER**

This item consists of Disposal of Heavily Chlorinated Water Main Flushing Water after sterilization or re-sterilization in accordance with the requirements of the EPA [40 C.F.R. 122.26], and NCTCOG Storm Water Quality Best Management Practices for Construction Activities (BPM) for disposal of discharge from water line disinfection.

This is a lump sum item and payment shall be based on the percentage of construction for complete, in place, maintained, removed, accepted work and equipment necessary to dispose of the heavily chlorinated water main flushing water after sterilization or re-sterilization.

This shall be a **contingent item** and shall only be used if directed by the Construction Engineer.

ITEM NO. 2033**ADJUSTMENT OF WATER VALVE COVERS AND VALVE STACKS**

This item consists of adjusting **13** Each Water Valve Cover and Valve Stack in accordance with Item 6.7.3.(k)(i) of these specifications and addenda thereto, and the applicable Drawings and Standard Appurtenance Sheets.

The adjustment shall include removal and replacement of the valve cover, adjusting the valve stack, and resetting the valve cover and lid to the proper grade. The Contractor shall furnish a valve cover and lid, if lost, stolen, or damaged due to Contractor's negligence.

This item complete and to include all equipment, materials and labor, all temporary and permanent paving, and paving related items, sidewalk, curb and/or gutter, driveways, sod, costs for barricading, trench safety and support, and all other work associated with this item. The bid price for this item will not be subject to renegotiation due to quantity overrun or underrun limitations as set forth in the Specifications.

Measurement and payment will be per Each complete in place.

ITEM NO. 2036**ADJUSTMENT OF WASTEWATER MANHOLES
WITH 24" LID**

This item consists of adjusting **6** Each Wastewater Manholes with 24" Diameter Lid in accordance with Item 6.7.2.(i) of these specifications and addenda thereto, and the applicable Drawings and Standard Appurtenance Sheets.

The adjustment shall include removal of the manhole ring and cover, constructing a manhole neck of new manhole rings and nonshrink grout, replacing the manhole ring and cover to the proper grade, and coating the outside of the manhole neck with a waterproof bituminous coating. The Contractor shall furnish a manhole ring or cover if lost, stolen, or damaged due to Contractor's negligence. This item also includes removal of the false bottom during final inspection.

This item complete and to include all equipment, materials and labor, all temporary and permanent paving, and paving related items, sidewalk, curb and/or gutter, driveways, sod, costs for barricading, trench safety and support, and all other work associated with this item. The bid price for this item will not be subject to renegotiation due to quantity overrun or underrun limitations as set forth in the Specifications.

Measurement and payment will be per Each complete in place.

ITEM NO. 2050**INVESTIGATION**

This item consists of excavating at approximately **4** Each locations to a specific infrastructure(s) to determine type, size, location, elevation, and/or condition as determined by the Engineer. The disturbed area will be replaced with compacted backfill in accordance with Items 6.2.9 and 6.2.10.(a) of these specifications and addenda thereto.

In paved areas, the pavement will be replaced with a compacted 8" thick base of Crushed Rock in accordance with Items 6.5.2, 4.5, and 2.1.3.(b), and a compacted 2" thick surface of Hot or Cold Mix asphalt pavement for temporary paving in accordance with Items 6.5.2, 5.7, and 2.4.13.

This item complete and to include all equipment, materials and labor, saw-cut, pavement, base, and sub-base removal, excavation, backfill, compaction, disposal of excess materials, all temporary and permanent paving, and paving related items, sidewalk, curb and/or gutter, driveways, sod, costs for barricading, trench safety and support, support for existing utilities, and all other work associated with this item.

Payment will not be made under this item if the infrastructure is to be adjusted, abandoned, or replaced prior to the placement of backfill. If the investigation is for more than one infrastructure in the same excavation, payment shall be made for only one investigation.

Measurement and payment will be per Each complete in place.

ITEM NO. 2054**ALTER WATER VALVE COVERS AND VALVE STACKS**

This item consists of altering **13** Each Water Valve Covers and Valve Stacks in accordance with Items 6.7.3.(k) and 6.7.3.(k)(2)(A) of these specifications and addenda thereto, and the applicable Drawings and Standard Appurtenance Sheets.

The alteration shall include removal and replacement of the valve cover, extending or removing a portion of the existing valve stack, and resetting the valve cover to a point 2' to 4' above the proposed paving grade. Final adjustment to the paving grade will be paid under another bid item. The Contractor shall furnish a new valve cover and lid if lost, stolen, or damaged due to Contractor's negligence.

This item complete and to include all equipment, materials and labor, all temporary and permanent paving, and paving related items, sidewalk, curb and/or gutter, driveways, sod, costs for barricading, trench safety and support, and all other work associated with this item. The bid price for this item will not be subject to renegotiation due to quantity overrun or underrun limitations as set forth in the specifications.

Measurement and payment will be per Each complete in place.

ITEM NO. 2063**RELOCATION OF TYPE 1 AIR VALVE**

This item consists of relocating **3** Each Type 1 Air Valve in accordance with Item 6.7.3.(l) of these specifications and addenda thereto, and the applicable Drawings and Standard Appurtenance Sheets.

The relocation shall include the removal of the existing manhole ring and cover, manhole neck, manhole, combination air valve, piping, riser and riser support and installing a new combination air valve and riser with support at a new location to the proper grade and reinstalling the salvaged manhole, manhole ring and cover. If the existing air valve is located in a meter box rather than a manhole the Contractor will furnish a new manhole, manhole ring and cover at no additional pay.

Final adjustment of the manhole ring and cover and construction of the manhole neck wall be paid under a separate item. Contractor shall furnish a new cone section and/or manhole ring and/or cover if lost, stolen, or damaged due to the Contractor's negligence.

This item complete and to include all equipment, materials and labor, all excavation, backfill, compaction, disposal of excess material, all temporary and permanent paving, and paving related items, sidewalk, curb and/or gutter, driveways, sod, costs for barricading, trench safety and support, and all other work associated with this item. The bid price for this item is not subject to renegotiations due to quantity overrun or underrun limitations as set forth in the specifications.

Measurement and payment will be per Each complete in place.

C 4.

SPECIFICATIONS

Besides this Section C, the following are part of this Contract:

The General Specifications (Standard Specifications for Public Works Construction - North Central Texas Council of Governments - Third Edition - 1998 including all Amendments, Second Edition -1987 OR First Edition - 1983 including all amendments); Dallas Water Utilities Addendum to North Central Texas Standard Specifications for Public Works Construction - December, 1998; Part "T" Technical Specifications (where this part is required); Dallas Water Utilities Standard Drawings - May, 1998

A copy of the Standard Specifications for Public Works Construction may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Arlington, Texas, Telephone (817) 640-3300.

A copy of the Dallas Water Utilities Standard Drawings can be obtained at the Water Utilities Department, 320 East Jefferson Boulevard Room 118, Dallas, Texas 75203, Telephone (214) 948-4500.

A copy of the Dallas Water Utilities Addendum to the General Specifications can be obtained at the Water Utilities Department, 320 East Jefferson Room 118, Dallas, Texas 75203, Telephone (214) 948-4500.

Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926; effective January 2, 1990 (or Latest Edition).

A copy of the Department of Public Works and Transportation Pavement Cut and Repair Standards Manual may be purchased from the Office of the Director of Public Works and Transportation, Public Works and Transportation Department, 320 E. Jefferson Boulevard, Room 102, Dallas, Texas 75203.

DWU Approved Materials by Trade Name (Latest Edition).

A copy of the Department of Public Works and Transportation Standard Construction Details 251D; September, 2002 or latest edition.

A copy of the Department of Public Works and Transportation Addendum to North Central Texas Standard Specifications for Public Works Construction; December, 1998 or latest edition.

PART "T"

TECHNICAL SPECIFICATIONS

CONSTRUCTION STAKING CUT SHEET

PROJECT: 12" Water in Highland Rd., from
Dorrington Dr. W to Jim
Miller Rd.

PARTY: Sanders & Party

DATE: June 18, 1986

FILE NO.: 411Q 1245, Sheet 126

CONTRACT NO.: 86-211

CONTRACTOR: Lightning Const. Co.

<u>STATION</u>	<u>CUT</u>	<u>OFFSET</u>	<u>LEFT</u>	<u>REMARKS</u>
9+50	6.43	Hub	10'	1-12"x8" Tee, 1-12" Valve & 1-8" Valve
10+00	8.12	"	"	
10+50	8.22	"	"	
11+00	8.82	"	"	
11+50	9.38	"	"	
12+00	9.45	"	"	
12+50	9.29	"	"	
13+00	9.47	"	"	
13+50	9.76	"	"	
13+57.30	9.69	"	"	P.T.
14+00	9.60	"	"	
14+50	9.33	"	"	
15+00	9.16	"	"	1-12"x8" F.H. Tee, 1-6" Valve & 1-F.H.
15+50	8.95	"	"	
16+00	8.65	"	"	
16+30	7.52	"x" Conc.	"	1-12"x8" Reducer
16+33.83	7.37	"	"	1-8"x8" Tapping Sleeve/Conn. To ex. W

Typed and Delivered To: Robert Preddy

Date: June 19, 1999

ITEM NO.	QUAN-TITY	UNIT	DESRPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
355A	2	EA	Removal of Internal Obstruction in Existing 6" Wastewater main, complete in place, the sum of <u>One Thousand</u> DOLLARS and <u>No</u> CENTS per each	1,000.00	2,000.00
355B	2	EA	Removal of Internal Obstruction in Existing 8" Wastewater main, complete in place, the sum of <u>Fifteen Hundred</u> DOLLARS and <u>No</u> CENTS per each	1,500.00	3,000.00
356A	4	EA	Furnish and place Connection to Existing Manhole, complete in place, the sum of <u>One Thousand Five Hundred</u> DOLLARS and <u>Ten</u> CENTS per each	1,500.10	6,000.40

THIS PAGE TO BE USED AS AN EXAMPLE FOR COMPLETING PROPOSAL PAGES

NOTE: The Contractor's Unit Price In Words, Unit Price In Numbers And Total Amount Must Be Shown For Each Bid Item.

CITY OF DALLAS WATER UTILITIES

TECHNICAL SPECIFICATIONS FOR MANHOLE FRAME SEAL

A frame seal with extensions where needed to cover the entire chimney area shall be installed on newly constructed wastewater manholes in accordance with the manufacturer's instructions. Frame seals shall consist of a flexible internal rubber sleeve, interlocking extensions and stainless steel expansion band as manufactured by Cretex Specialty Products, or approved equal, conforming to the following requirements.

The seal shall remain flexible throughout a 25-year design life, allowing repeated vertical movement of the frame of not less than 2 inches and/or repeated horizontal movements of not less than ½ inch. The sleeve portion of the seal shall be either double or triple pleated with a minimum unexpanded vertical height of either 8 inches or 10 inches respectively. The sleeve and extension shall have a minimum thickness of 3/16 inches and shall be made from a high quality rubber compound conforming to the applicable requirements of ASTM C-923, with a minimum 1,500 psi tensile strength, a maximum 18% compression set and a hardness (durometer) of 48 ± 5 . The bands shall be integrally formed from 16-gauge stainless steel conforming to ASTM A-240, Type 304, with no welded attachments, and shall have a minimum adjustment range of 2 diameter inches and a positive locking mechanism. Any screws, bolts, or nuts used for this mechanism shall be stainless steel conforming to ASTM F-593 and F-594, Type 304.

All costs for furnishing and installing the seal and extensions shall be included in the applicable unit price bid for wastewater manholes.

END OF SECTION

**CITY OF DALLAS WATER UTILITIES
TECHNICAL SPECIFICATIONS
FOR
TELEVISION INSPECTION OF WASTEWATER MAINS**

PART 1 GENERAL

1.01 SCOPE OF WORK:

The purpose of television inspection of wastewater mains is to verify mains are properly cleaned in preparation for rehabilitation and to identify areas in the existing main that may require repair. After cleaning, the main sections shall be visually inspected by means of closed-circuit television. The inspection will be done one manhole section at a time and the flow in the section being inspected will be suitably controlled as specified in the Wastewater Flow Control section of these specifications.

1.02 RELATED WORK

- A. Wastewater Flow Control
- B. Wastewater Main Cleaning

PART 2 EQUIPMENT

2.01 TELEVISION CAMERA

The television camera used for the inspection shall be specifically designed and constructed for such inspection. Lighting for the camera shall allow a clear picture of the entire periphery of the pipe above the existing flow. The camera shall be operative in 100% humidity conditions. The camera, television monitor, and other components of the video system shall produce a picture quality to the satisfaction of the Engineer, and if the picture quality is not satisfactory, TV inspection equipment shall be removed. No payment will be made for an unsatisfactory inspection.

2.02 COMMUNICATION EQUIPMENT

When manually operated winches are used to pull the television camera through the main, two way radio or other suitable means of communication shall be set up between the two manholes of the section being inspected to insure good communications between members of the crew.

PART 3 EXECUTIONS

3.01

The camera shall be moved through the main in either direction at a moderate rate and panning of laterals, stopping when necessary to permit proper documentation of the wastewater main's condition. In no case will the television camera be pulled at a speed greater than 30 feet per minute. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the wastewater main's conditions shall be used to move the camera through the wastewater main.

3.02 DISTANCE MEASUREMENTS

The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a meter device. Marking on the cable or the like, which would require interpolation for depth of manhole will not be allowed. Accuracy of the distance meter shall be checked by use of a walking meter, roll-a-tape, or other suitable device, and the accuracy shall be satisfactory to the Engineer.

3.03 DOCUMENTATION:

Documentation of the television results shall be as follows:

A. Television Inspection Logs

Printed location records shall be kept by the Contractor and will clearly show the location in relation to an adjacent manhole of each infiltration point observed during inspection. In addition, other points of significance such as locations of building wastewater mains, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, and other discernible features will be recorded and a copy of such records will be supplied to the Engineer.

B. Photographs

Photographs of the television inspection, if required, shall be made with instant developing 35 mm or other standard size photographic film. Photographs shall be at the request of the Engineer, as long as such photographing does not interfere with the Contractor's operations.

C. DVD Recordings

The purpose of DVD recording shall be to supply a visual and audio record of problem areas of the mains that may be replayed. DVD recording playback shall be at the same speed that it was recorded. Slow motion or stop-motion playback features will be supplied. The Contractor shall have all DVD and necessary playback equipment readily accessible for review by the Engineer during the Project, after which time the DVD will be turned over to the Engineer at the completion of the project.

END OF SECTION

**DALLAS WATER UTILITIES
APPROVED MATERIALS BY TRADE NAME**

Revised AS OF JULY 1, 2006 Johnny Partain 214-670-8796

BASIC PRODUCT CATEGORY	PRODUCT SUB-CATEGORY	MANUFACTURER	MODEL, TYPE, OR STYLE APPROVED	GOVERNING SPECIFICATION	EXCEPTIONS	NSF 61 CERTIFIED
Casing Spacers						

Coatings						
PIPE COATING	FITTING COATING	AQUAARMOR	METAL JACKET	ASTM B117 and NSF 61		NSF

Corporation Stop						
3/4" & 1" CORPORATION STOP *	QUICK JOINT BALL VALVE	FORD	FB-1000-x-Q	AWWA C800 & COG 2.16		UL
3/4" & 1" CORPORATION STOP *	SUPER GRIP BALL VALVE	JAMES JONES	J-1937-SG	AWWA C800 & COG 2.16		UL
3/4" & 1" CORPORATION STOP *	Q-SERIES BALL VALVE	McDONALD	4701B-Q	AWWA C800 & COG 2.16		TRUESDAIL
3/4" & 1" CORPORATION STOP *	110 BALL VALVE	MUELLER **	B-25008	AWWA C800 & COG 2.16	** R-REDUCED NOT APPROVED	UL

***MUST HAVE STAINLESS STEEL COMPRESSION GRIP RING.**

Corporation Stop						
1 1/2" & 2" CORPORATION STOP *	QUICK JOINT BALL VALVE	FORD	FB-1000-x-Q-K	AWWA C800 & COG 2.16	MUST HAVE LXI MARKING	UL

ONLY FORD LXI ARE APPROVED FOR 1 1/2" AND 2".

Coupling Adapter						
COUPLING ADAPTER*	FLANGED, IRON	FORD	FFCA SERIES	AWWA C219 & DWU SPEC	ANCHOR STUDS NOT ALLOWED	UL
COUPLING ADAPTER	FLANGED, CARBON STEEL	HYMAX	2100 SERIES	AWWA C219 & DWU SPEC	ANCHOR STUDS NOT ALLOWED	NSF
COUPLING ADAPTER*	FLANGED, IRON	JCM	301 SERIES	AWWA C219 & DWU SPEC	ANCHOR STUDS NOT ALLOWED	NSF
COUPLING ADAPTER*	FLANGED, IRON	ROMAC	FCA 501	AWWA C219 & DWU SPEC	ANCHOR STUDS NOT ALLOWED	NSF
COUPLING ADAPTER*	FLANGED, IRON	SMITH-BLAIR	912 (NEW & OLD) STYLE	AWWA C219 & DWU SPEC	912-9 W/RED GLANDS NOT ALLOWED	NSF

*** MUST HAVE 12 MILS FUSION BONDED EPOXY COATING.**

Coupling Straight						
COUPLING, STRAIGHT*	FOR GRAY AND DI PIPE	FORD	FC1 STYLE	AWWA C219 & DWU SPEC		UL
COUPLING, STRAIGHT*	FOR GRAY AND DI PIPE	JCM	210 SERIES	AWWA C219 & DWU SPEC		NSF
COUPLING, STRAIGHT*	FOR GRAY AND DI PIPE	ROMAC	STYLE 501	AWWA C219 & DWU SPEC		NSF
COUPLING, STRAIGHT*	FOR GRAY AND DI PIPE	SMITH-BLAIR	441, 461 & 462 SERIES	AWWA C219 & DWU SPEC		NSF

*** MUST HAVE 12 MILS FUSION BONDED EPOXY COATING & 316 SS BOLTS.**

Coupling Transition						
COUPLING, TRANSITION*	FOR GRAY AND DI PIPE	FORD	FC5 STYLE	AWWA C219 & DWU SPEC		UL
COUPLING, TRANSITION*	FOR GRAY AND DI PIPE	POWERSEAL	POWERMAX	AWWA C219 & DWU SPEC		NSF
COUPLING, TRANSITION*	FOR GRAY AND DI PIPE	ROMAC	XR-501	AWWA C219 & DWU SPEC		NSF
COUPLING, TRANSITION*	FOR GRAY AND DI PIPE	SMITH-BLAIR	441, 461 & 462 SERIES	AWWA C219 & DWU SPEC		NSF

***MUST HAVE 12 MILS FUSION BONDED EPOXY COATING & 316 SS BOLTS.**

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Curb Stop						
3/4" & 1" CURB STOP *	QUICK JOINT BALL VALVE	FORD	B-41-xxx-W-Q	AWWA C800 & COG 2.16		UL
3/4" & 1" CURB STOP *	SUPER GRIP BALL VALVE	JAMES JONES	J-1921-WSG	AWWA C800 & COG 2.16		UL
3/4" & 1" CURB STOP *	Q-SERIES BALL VALVE	McDONALD	6102W-Q	AWWA C800 & COG 2.16		TRUESDAIL
3/4" & 1" CURB STOP *	110 BALL VALVE	MUELLER **	B-25170	AWWA C800 & COG 2.16	** R-REDUCED NOT APPROVED	UL

*MUST HAVE STAINLESS STEEL COMPRESSION GRIP RING.

Curb Stop						
1 1/2" & 2" CURB STOP *	QUICK JOINT BALL VALVE	FORD	B-41-xxx-W-Q-K	AWWA C800 & COG 2.16	*MUST HAVE LXI MARKING	UL

ONLY FORD LXI ARE APPROVED FOR 1 1/2" AND 2"

Fire Hydrants						
FIRE HYDRANTS*		AMERICAN-DARLING	B-84-B	AWWA C502 & DWU 2.14		NA
FIRE HYDRANTS*		CLOW*	MEDALLION F2545*	AWWA C502 & DWU 2.14	MUST HAVE DWU ID TAG	NA
FIRE HYDRANTS*		KENNEDY	K-81-A or D (GUARDIAN)	AWWA C502 & DWU 2.14		NA
FIRE HYDRANTS*		MUELLER	SUPER CENTURION 250	AWWA C502 & DWU 2.14	NEW LOWER BARREL APPROVED	NA
FIRE HYDRANTS*		US PIPE & FOUNDRY	MET 250 M-94	AWWA C502 & DWU 2.14		NA

* MUST HAVE FULL BODY GLANDS AND RED PRIMER.

Fittings						
FITTINGS, FULL-BODIED	GRAY OR DUCTILE IRON	AMERICAN CAST IRON PIPE		AWWA C110 & COG 2.12.7 & .8	16" PLUS	NSF
FITTINGS, FULL-BODIED	GRAY OR DUCTILE IRON	STAR PIPE		AWWA C110 & COG 2.12.7 & .8		NSF
FITTINGS, FULL-BODIED	GRAY OR DUCTILE IRON	TYLER/UNION/UFCO		AWWA C110 & COG 2.12.7 & .8		UL
FITTINGS, FULL-BODIED	GRAY OR DUCTILE IRON	US PIPE & FOUNDRY		AWWA C110 & COG 2.12.7 & .8		NSF

COMPACT FITTINGS AND GLANDS ARE NOT ALLOWED.

Flange Adapters						
FLANGE ADAPTERS	FOR DI PIPE	EBAA IRON	SERIES 2100 MEGAFLANGE	AWWA C219 & DWU SPEC		

Access Hatches						

**DALLAS WATER UTILITIES
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Manhole Appurtenance						
MANHOLE GRADE ADJUSTMENT RINGS		CHILTON ASSOCIATES		COG 2.19, ASTM C478		NA
MANHOLE RING & LID	24-INCH	BASS & HAYS*	#400-24	DWU DRAWING & SPEC	*MUST HAVE BITUMINOUS COATING	NA
MANHOLE RING & LID	24-INCH	BASS & HAYS*	#400-24D	DWU DRAWING & SPEC	*MUST HAVE BITUMINOUS COATING	NA
MANHOLE RING & LID	24-INCH	SIGMA*	MH140W	DWU DRAWING & SPEC	*MUST HAVE BITUMINOUS COATING	NA
MANHOLE RING & LID	40-INCH	BASS & HAYS*	#1225-40	DWU DRAWING & SPEC	*MUST HAVE BITUMINOUS COATING	NA

Pipe Material						

Pipe Lubricant						
PIPE LUBRICANT		W. CANNING	VINOLEO PIPE JOINT LUBE	PURCHASING DESC. 16-0575		NSF
PIPE LUBRICANT		JTM PRODUCTS	PHOENIX PIPE JOINT LUBE	PURCHASING DESC. 16-0575		NSF
PIPE LUBRICANT		SEACORD CORP.	TYTON JOINT LUBRICANT AND EASE ON	PURCHASING DESC. 16-0575		NSF
PIPE LUBRICANT		J. C. WHITLAM	BLUE LUBE	PURCHASING DESC. 16-0575		NSF

Polywrap						
POLYWRAP	WRAP MUST BE LLDPE, t= 0.008", MANUFACTURED AND LABELED IN ACCORDANCE WITH AWWA C105.					

Retainer Glands						
RETAINER GLANDS	FOR DI PIPE	EBAA IRON	MEGALUG 1100 & 1100SD	DWU SPEC & COG 2.12.7		-
RETAINER GLANDS	FOR DI PIPE	UNI-FLANGE	SERIES 1400-D	DWU SPEC & COG 2.12.7		-
RETAINER GLANDS	FOR PVC PIPE	EBAA IRON	MEGALUG - SERIES 2000 PV	DWU SPEC & COG 2.12.20		-
RETAINER GLANDS	FOR PVC PIPE	EBAA IRON	MEGALUG - SERIES 2000 PV	DWU SPEC & COG 2.12.20		-
RETAINER GLANDS	FOR PVC PIPE	UNI-FLANGE	SERIES 1500-C	DWU SPEC & COG 2.12.20		-
RETAINER GLANDS	FOR PVC PIPE	ROMAC	RomaGrip	DWU SPEC & COG 2.12.20		-
RETAINER GLANDS	FOR PVC PIPE	SIGMA	One-Lok	DWU SPEC & COG 2.12.20		-

DALLAS WATER UTILITIES
APPROVED MATERIALS BY TRADE NAME
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Service Saddles						
SERVICE SADDLES	BRONZE DOUBLE STRAP	JAMES JONES	J-979	AWWA C800 & COG 2.17		UL
SERVICE SADDLES	BRONZE DOUBLE STRAP	FORD*	202B	AWWA C800 & COG 2.17	NEW MAIN INSTALLATIONS ONLY	UL
SERVICE SADDLES	BRONZE DOUBLE STRAP	McDONALD	3825	AWWA C800 & COG 2.17	-	UL
SERVICE SADDLES	BRONZE DOUBLE STRAP	MUELLER	BR2B	AWWA C800 & COG 2.17		NSF
SERVICE SADDLES	BRONZE DOUBLE STRAP	SMITH-BLAIR*	323	AWWA C800 & COG 2.17	NEW MAIN INSTALLATIONS ONLY	NSF

Tapping Sleeve		Carbon Steel				
TAPPING SLEEVE	CARBON STEEL*	FORD	FTSC-xxxx-SH	DWU SPEC & COG 2.13.1r(2)		UL
TAPPING SLEEVE	CARBON STEEL*	ROMAC	FTS420	DWU SPEC & COG 2.13.1r(2)	MUST HAVE 3/8" MIN. THICKNESS	NSF
TAPPING SLEEVE	CARBON STEEL*	SMITH-BLAIR	622 SERIES	DWU SPEC & COG 2.13.1r(2)		NSF

*STEEL SLEEVES SHALL BE RESTRICTED TO PIPE SIZES 12" AND LARGER AND SHALL NOT BE USED FOR TAPS GREATER THAN 75% OF THE MAIN SIZE.

*MUST HAVE SS BOLTS AND NUTS. MUST BE EPOXY COATED.

Tapping Sleeve		Gray or DI				
TAPPING SLEEVE	GRAY OR DI, FULL BODIED	MUELLER	H-615	DWU SPEC & COG 2.13.1r(2)		NSF
TAPPING SLEEVE	GRAY OR DI, FULL BODIED	U. S. PIPE	-	DWU SPEC & COG 2.13.1r(2)		NSF

Tapping Sleeve		Stainless Steel				
TAPPING SLEEVE	STAINLESS STEEL*	CASCADE	CST-EX	DWU SPEC & COG 2.13.1r(2)	12" PIPE MAX	UL
TAPPING SLEEVE	STAINLESS STEEL*	FORD	FTSS	DWU SPEC & COG 2.13.1r(2)	12" PIPE MAX	UL
TAPPING SLEEVE	STAINLESS STEEL*	JCM	432	DWU SPEC & COG 2.13.1r(2)	12" PIPE MAX	NSF
TAPPING SLEEVE	STAINLESS STEEL*	MUELLER	H304	DWU SPEC & COG 2.13.1r(2)	12" PIPE MAX	NSF
TAPPING SLEEVE	STAINLESS STEEL*	ROMAC	SST III	DWU SPEC & COG 2.13.1r(2)	12" PIPE MAX	NSF
TAPPING SLEEVE	STAINLESS STEEL*	SMITH-BLAIR	665	DWU SPEC & COG 2.13.1r(2)	12" PIPE MAX	NSF

*OUTLET FLANGES MUST ALSO BE STAINLESS STEEL.

Air Valves						
VALVES, AIR	AIR RELEASE AND VACUUM BREAKER	CLA-VAL		COG 2.13.2		-
VALVES, AIR	AIR RELEASE AND VACUUM BREAKER	CRISPIN		COG 2.13.2		-
VALVES, AIR	AIR RELEASE AND VACUUM BREAKER	G. A. INDUSTRIES (EMPIRE)		COG 2.13.2		-
VALVES, AIR	AIR RELEASE AND VACUUM BREAKER	VAL-MATIC		COG 2.13.2		-
VALVES, AIR	AIR RELEASE AND VACUUM BREAKER	VALVE & PRIMER (APCO)		COG 2.13.2		-
VALVES, AIR	AIR RELEASE AND VACUUM BREAKER	VENT-O-MAT	RBX SERIES	COG 2.13.2		-

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Valve Box Risers						
VALVE BOX RISERS*	ADJUSTABLE - ANCHOR TYPE	BASS & HAYS	#1824 SET SCREW TYPE	COG 2.11.5 & DWU 7360-2525-91		NA

* MAY ONLY BE USED FOR ADVANCE OF PAVING.

Valves	Butterfly					
VALVES, BUTTERFLY	MECHANICALLY RETAINED SEATS ONLY	M & H	48-INCH & SMALLER	AWWA C504 & DWU SPECS		NSF
VALVES, BUTTERFLY	MECHANICALLY RETAINED SEATS ONLY	SPX (K-FLO)	30-INCH & LARGER	AWWA C504 & DWU SPECS		UL
VALVES, BUTTERFLY	MECHANICALLY RETAINED SEATS ONLY	VALMATIC	36-INCH & SMALLER	AWWA C504 & DWU SPECS		UL

Valves	Covers and Lid					
VALVE COVERS	LID	BASS & HAYS	#340-1	COG 2.11.5		NA
VALVE COVERS	10" COVER	BASS & HAYS	#340-1	COG 2.11.5		NA
VALVE COVERS	18" COVER	BASS & HAYS	#348-1	COG 2.11.5		NA

Valves	Double-Disc					
VALVES, GATE*	DOUBLE-DISC, METAL SEATED	CLOW		C500, DWU SPEC & COG 2.13.1		NSF
VALVES, GATE*	DOUBLE-DISC, METAL SEATED	MUELLER		C500, DWU SPEC & COG 2.13.1		NSF
VALVES, GATE*	DOUBLE-DISC, METAL SEATED	U. S. PIPE	METROPOLITAN	C500, DWU SPEC & COG 2.13.1		NSF

* MUST HAVE 316 SS BOLTS.

Valves	Vertical Resilient					
VALVES, GATE*	VERTICAL, RESILIENT SEATED	CLOW	F-6100	C509, COG 2.13.5 & DWU RSGV	12" MAX.	NSF
VALVES, GATE*	VERTICAL, RESILIENT SEATED	KENNEDY	KENSEAL II	C509, COG 2.13.5 & DWU RSGV	12" MAX.	NSF
VALVES, GATE*	VERTICAL, RESILIENT SEATED	M & H	4067	C509, COG 2.13.5 & DWU RSGV	12" MAX.	NSF
VALVES, GATE*	VERTICAL, RESILIENT SEATED	MUELLER	2360	C509, COG 2.13.5 & DWU RSGV	12" MAX.	NSF
VALVES, GATE*	VERTICAL, RESILIENT SEATED	U. S. PIPE	2360	C509, COG 2.13.5 & DWU RSGV	12" MAX.	NSF

* MUST HAVE 316 SS BOLTS. BOTH RED EPOXY OR BITUMINOUS EXTERIOR COATINGS ARE ALSO ACCEPTABLE.

* AWWA C-515 RSGVs WITH REDUCED WALL THICKNESSES ARE NOT ACCEPTABLE.

Water Meter Vaults	Large Services					
WATER METER VAULTS	CONCRETE	AMERICAN INDUSTRIAL PRECAST	MUST HAVE APPROVED LIFTING DEVICES	DWU SPECS		-
WATER METER VAULTS	CONCRETE	BROOKS/OLDCASTLE PRECAST	MUST HAVE APPROVED LIFTING DEVICES	DWU SPECS		-
WATER METER VAULTS	CONCRETE	CONCRETE PRODUCTS (CPI)	MUST HAVE APPROVED LIFTING DEVICES	DWU SPECS		-
WATER METER VAULTS	CONCRETE	HANSON	MUST HAVE APPROVED LIFTING DEVICES	DWU SPECS		-
WATER METER VAULTS	CONCRETE	NEW BASIS (DALWORTH QUICKSET)	MUST HAVE APPROVED LIFTING DEVICES	DWU SPECS		-

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Water Meter Vaults	Small Services					
WATER METER BOXES FOR 3/4" & 1" SERVICES	PLASTIC WITH DI RING & LID	ACCUCAST	846211 COMPLETE, 842100 BOX, 872065 LID, 872061 RING	DWU SPECS		NA
WATER METER BOXES FOR 3/4" & 1" SERVICES	PLASTIC WITH DI RING & LID	BASS & HAYS MID STATES	MS18DAL BOX, BH-3PD LID, BH-4PD RING	DWU SPECS		NA
WATER METER BOXES FOR 3/4" & 1" SERVICES	PLASTIC WITH DI RING & LID	SIGMA	MB151-DFW-18DAL	DWU SPECS		NA
WATER METER BOXES FOR 1 1/2" & 2" SERVICES	PLASTIC WITH DI RING & LID	BASS & HAYS MID STATES	MS30DAL BOX, BH-5PD LID & RING	DWU SPECS		NA

* GALVANIZED BOXES ARE NOT ACCEPTABLE.

W/M Couplings	MIP x Compression					
WATER METER COUPLINGS	MIP X COMPRESSION 90	FORD	L84-xx-Q	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	MIP X COMPRESSION 90	McDONALD	4753Q	DWU SPECS & PURCHASING DESCRIPTION		TRUESDAIL
WATER METER COUPLINGS	MIP X COMPRESSION 90	MUELLER	H-15531	DWU SPECS & PURCHASING DESCRIPTION		UL
W/M Couplings	Brass Misc.					
WATER METER COUPLINGS	BRASS - CROOKED	FORD	3/4" - L38-23 and 1" - L38-44	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	BRASS - CROOKED	McDONALD	3/4" - 4621 DALLAS 1" - 4623 DALLAS	DWU SPECS & PURCHASING DESCRIPTION		TRUESDAIL
WATER METER COUPLINGS	BRASS - CROOKED	MUELLER	H-10892	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	BRASS - MIP x MIP ELL	FORD	L88-77	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	BRASS - MIP x MIP ELL	JAMES JONES	J2604	DWU SPECS & PURCHASING DESCRIPTION		UL
W/M Couplings	Meter Flange					
WATER METER COUPLINGS	1 1/2" BRASS METER FLANGE	JAMES JONES*	J129H	DWU SPECS & PURCHASING DESCRIPTION	*FLANGE MUST BE 3/4" THICK	-
WATER METER COUPLINGS	1 1/2" BRASS METER FLANGE	McDONALD*	610F	DWU SPECS & PURCHASING DESCRIPTION	*FLANGE MUST BE 3/4" THICK	-
WATER METER COUPLINGS	2" BRASS METER FLANGE	JAMES JONES*	J129H	DWU SPECS & PURCHASING DESCRIPTION	*FLANGE MUST BE 3/4" THICK	-
WATER METER COUPLINGS	2" BRASS METER FLANGE	McDONALD*	610F	DWU SPECS & PURCHASING DESCRIPTION	*FLANGE MUST BE 3/4" THICK	-
W/M Couplings	Flange Bolts					
WATER METER COUPLINGS	1 1/2" FLANGE BOLTS		5/8" X 2 1/4" HEXHEAD CAPSCREW, GRADE 2, ZINC PLATED, SAR THREADED			-
WATER METER COUPLINGS	2" FLANGE BOLTS		5/8" X 2 1/4" HEXHEAD CAPSCREW, GRADE 2, ZINC PLATED, SAR THREADED			-

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W/M Couplings	Straight					
WATER METER COUPLINGS	3/4" BRASS - STRAIGHT	FORD	C38-23-2.5	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	3/4" BRASS - STRAIGHT	McDONALD	4622 DALLAS	DWU SPECS & PURCHASING DESCRIPTION		TRUESDAIL
WATER METER COUPLINGS	3/4" BRASS - STRAIGHT	MUELLER	H-10890	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	1" BRASS - STRAIGHT	FORD	C38-44-2.625	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	1" BRASS - STRAIGHT	McDONALD	4624 DALLAS	DWU SPECS & PURCHASING DESCRIPTION		TRUESDAIL
WATER METER COUPLINGS	1" BRASS - STRAIGHT	MUELLER	H-10890	DWU SPECS & PURCHASING DESCRIPTION		UL
W/M Couplings	FIP					
WATER METER COUPLINGS	FIP x COMPRESSION COUPLING	FORD	C14-xx Q	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	FIP x COMPRESSION COUPLING	McDONALD	4754Q	DWU SPECS & PURCHASING DESCRIPTION		TRUESDAIL
WATER METER COUPLINGS	FIP x COMPRESSION COUPLING	MUELLER	H-15451	DWU SPECS & PURCHASING DESCRIPTION		UL
W/M Couplings	MIP					
WATER METER COUPLINGS	MIP x COMPRESSION COUPLING	FORD	C84-xx-Q SERIES	DWU SPECS & PURCHASING DESCRIPTION		UL
WATER METER COUPLINGS	MIP x COMPRESSION COUPLING	McDONALD	4753Q	DWU SPECS & PURCHASING DESCRIPTION		TRUESDAIL
WATER METER COUPLINGS	MIP x COMPRESSION COUPLING	MUELLER	H-15428	DWU SPECS & PURCHASING DESCRIPTION		UL

SILT FENCE

GENERAL NOTES

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

SILT FENCE

North Carolina State Council of Governmental



STANDARD SPECIFICATION REFERENCE

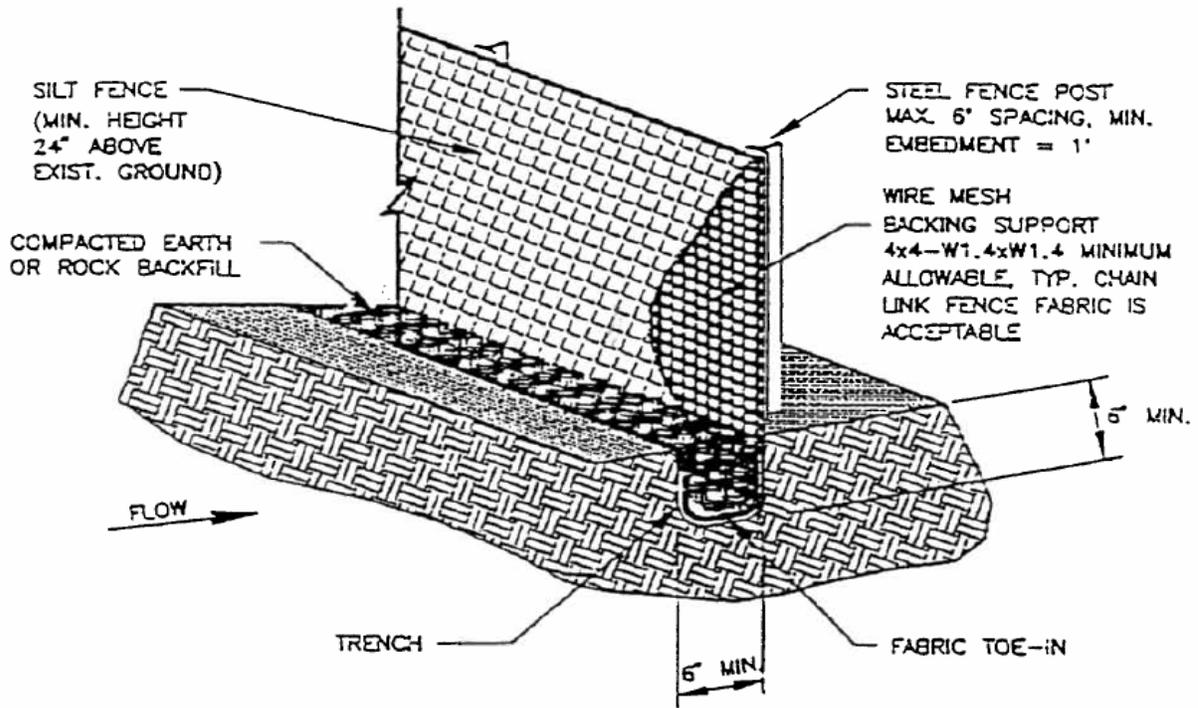
02270.B

DATE

DEC. 92

STANDARD NUMBER

2020 B



ISOMETRIC PLAN VIEW
N.T.S.

SILT FENCE	North Carolina State Council of Governments	STANDARD SPECIFICATION REFERENCE	
		02270.B	STANDARD DRAWING NO.
		DATE	2020 A
		DEC. 92	

**CITY OF DALLAS WATER UTILITIES
TECHNICAL SPECIFICATIONS
FOR
CORROSION PROTECTION EPOXY LINER
IN CONCRETE STRUCTURES**

PART 1 GENERAL

1.01 SCOPE OF WORK

Furnish all the necessary materials, labor, equipment, tools, and associated appurtenances to install a corrosion protection epoxy liner system on interior walls and ceilings of wastewater manholes as shown on the plan drawings and specified herein.

1.02 SUBMITTALS

Submit engineering data covering design and installation Submittal data must include, but not limited to:

- A. Technical data on all materials including catalogue cut sheets.
- B. Installation procedures (including surface preparation) in accordance with manufacturer's recommendation.

PART 2 PRODUCT

2.01 MATERIALS

A. Resurfacing Material

- 1. Provide resurfacing material to fill cavities and resurface exposed aggregate where it is impossible to achieve a pinhole-free membrane at the specified total topcoat film thickness.
- 2. Resurfacing material shall be the following:

AquataPoxy A-7 manufactured by RAVEN LINING SYSTEMS, 1024 North Lansing, Tulsa, OK 74106, or approved equal, having NFS 61 Certification.

B. Topcoat

1. Provide a high build epoxy coating that is 100 percent solids epoxy formulated with a wide range of chemical resistance, including resistance to hydrogen sulfide and sulfuric acid, and a high physical strength. Coating must be designed for temperatures up to 200 degrees F. Coating shall be Raven 405® manufactured by RAVEN LINING SYSTEMS, 1024 North Lansing, Tulsa, OK 74106, or approved equal.
2. The material must be suitable for overhead, vertical and horizontal surfaces, and capable of being spray applied, brushed or rolled at the manufacturer's specified thickness in a single application.
3. The material must provide a permanent impermeable, high strength, monolithic lining for concrete structures that is sulfuric acid corrosion, abrasion and impact resistant.

Performance Testing

Flexural Strength	ASTM D790
Compressive Strength, Yield	ASTM D695
Tensile Strength	ASTM D638
Tensile Ultimate Elongation	ASTM D638
Hardness, Shore D	ASTM D2583
Impact, IZOD	ASTM D256
Water Vapor Transmission	ASTM D1653, Method B
Taber Abrasion, CS17 Wheel	ASTM D4060
Adhesion	ASTM D4541
Temperature Resistance	200 deg. F.

PART 3 EXECUTION

3.01 GENERAL

- A. Perform surface preparation and installation of epoxy liner system in accordance with manufacturer's recommended procedures.
- B. Limits of Application - The interior walls and ceiling of structures, exposed part of manhole frame and manhole benches.
- C. The topcoat materials must be applied by factory trained and/or fully qualified technicians only. Have a manufacturer's representative present at the start of the installation procedure.
- D. Remove all steps, protrusions or other such obstructions prior to beginning the lining process as directed by the Owner.

3.02 SURFACE PREPARATION

- A. Surface must be clean and structurally sound. Repair and resurface any defective areas prior to surface preparation. Apply resurfacing material in accordance with the manufacturer's recommendation.
- B. Clean and dry the concrete by dry abrasive brush blast removing laitance, form release agents, curing membranes and contaminants to provide a sound, firm surface with no loose matter. Wet abrasive blasting is allowed provided that the water produced does not hinder application. Water blasting alone will not be allowed except for decontamination. Abrasive blasting must produce an anchor pattern on the surface, similar to sandpaper, suitable for coating. Avoid opening excessive cavities during abrasive blast. Round off any sharp edges by chipping, wire brushing or any other method.
- C. Alternate methods of surface preparation, i.e. acid etch or high pressure water wash, may be used with prior written approval of the liner manufacturer.
- D. Repair all hydrostatic leaks in the structure prior to applying the liner system. Use a cement base, quick-setting, hydraulic leak repair compound which instantly stops water or seepage and expands as it sets.

3.03 APPLICATION PROCEDURE

- A. Clean the surface of any blasting residue, either with dry air or brushing.
- B. Apply properly mixed materials by conventional high pressure airless spray, brush or roller. Apply material on the prepared surfaces in a single application, as specified by the manufacturer (consult manufacturer for theoretic coverage in square feet per gallon).
- C. Apply the topcoat within the ambient temperature, material temperature and relative humidity ranges specified by the manufacturer.
- D. Take the precaution in applying one or more test patches to determine the optimum method and rate of application.

- E. A minimum 12 hours after application, inspect top coat with high-voltage holiday detection equipment (spark-tester). An induced holiday made on the coated concrete surface will serve to delimit the minimum/maximum voltage to be used in testing the coating for holidays at that particular area. Initially set the spark tester at 100 volts per 1 mil of film thickness applied but increase if it is insufficient to detect the induced holiday. Mark all detected holidays and repair per the manufacturer's recommendations.
- F. Minimum cure time prior to immersion or exposure to fluids must be 8 hours at 70 degrees F. Allow 72 hours cure time before exposure to abrasive or impact conditions.

G. Dry Film Thickness Inspection

At the Owner's direction, perform destructive dry film thickness measurements in accordance with SSPC PA-2 guidelines for frequency of sampling, averaging of sample results, minimum acceptable value for any one sample result, etc.. The average dry film thickness of the liner system must be 120 mils. A magnetic reading may be utilized, provided metal plates are over coated in the application process.

H. Application Log

Keep a daily log showing date, weather conditions, quantity of structure(s) lined (square footage covered), and number of gallons of lining compound expended.

I. Adhesion Testing

The fully cured manhole structures is subjected to adhesion testing at the direction of the Owner. Use an elcometer testing device to verify an adhesion value of 300 psi.

3.04 SAFETY

Perform all application procedures in accordance with OSHA and NIOSH requirements. Adhere to the Material Safety Data Sheets and the manufacturer's recommendations regarding safe use of respirators, ventilators and protective clothing. Use thorough forced ventilation to prevent any solvent vapor concentration from reaching the lower explosion limit for the solvent use. Where flammable solvents exist, use explosion-proof lighting.

3.05 PAYMENT

Payment for providing and installing liner specified in this Section shall be inclusive to the Bid Items.

END OF SECTION

TECHNICAL SPECIFICATIONS FOR WASTEWATER REPLACEMENT BY PIPE BURSTING

1.0 GENERAL

1.01 DESCRIPTION: This specification includes requirements to rehabilitate existing wastewater mains by the pipe bursting method which splits the existing pipe and immediately installs a new wastewater pipe. Rehabilitation includes reconnecting existing sewer house connections, television inspection of the new pipe and complete installation in accordance with the Contract documents.

1.02 QUALITY ASSURANCE:

- a. The Contractor shall be certified by the particular Pipe Bursting System Manufacturer that such firm is a licensed installer of their system.
- b. Polyethylene pipe jointing shall be performed by personnel trained in the use of thermal butt-fusion equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by qualified representative.
- a. The Contractor shall hold the City and Engineer harmless in any legal action resulting from patent infringements.
- b. The Contractor is solely responsible for quality assurance during the length of the project. The Contractor is responsible for any costs associated with corrective measures required to replace or repair items not meeting the quality standards specified by the Owner.

1.03 SUBMITTALS:

The Contractor shall submit the following items for review and approval by the Owner in accordance with the Contract Documents. Owner approval of the submittals shall be obtained prior to ordering pipe materials and/or commencing the pipe replacement process.

- a. Shop drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings. Include manufacturer's recommendation for handling, storage, and repair of pipe and fittings damaged.
- b. Certifications of training by the pipe bursting systems manufacturer stating that the operators have been fully trained in the use of the proposed pipe bursting equipment by an authorized representative of the equipment manufacturer.
- c. Evidence of license issued by British Gas or an authorized British Gas sublicensee.
- d. Certifications of training by the pipe fusion equipment manufacturers that the operators have been fully trained in the use of the fusion equipment by an authorized representative of the equipment manufacturer.
- e. Detailed construction procedures, and layout plans to include sequence of construction.
- f. Locations, sizes and construction methods for the service reconnection pits.
- g. Methods of construction, reconnection and restoration of existing service laterals and methods of maintaining wastewater service.
- h. The methods of modification, if required, for existing manholes.
- i. Detailed engineering calculations of the bursting force or static pulling force required to install pipe for each run.
- j. Detailed procedures for the installation and bedding of pipe in launching and receiving pits, including temporary alignment of new pipe prior to insertion.
- k. Sewer bypass plans, including methods and list of equipment to be utilized.
- l. Description of method to remove and dispose of the host pipe, if required.
- m. Safety plan in conformance with the Contract Documents and OSHA regulations.
- n. Project schedule.

1.04 DELIVERY, STORAGE, AND HANDLING:

- a. Transport, handle, and store pipe and fittings as recommended by manufacturer.
- b. If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer at the Contractor's expense, before proceeding further.
- c. Deliver, store and handle other materials as required to prevent damage.

1.05 METHODS FOR NEW PIPE INSTALLATION

The most commonly used methods for pipe bursting utilize static or impact force. Static systems are hydraulic, while impact systems generally involve a combination of pneumatic and hydraulic technology.

The pipe bursting tool shall be designed and manufactured to force its way through the existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soil as it progresses. The bursting unit shall generate sufficient force to burst and compact the existing pipeline. The bursting tool size shall be in accordance with the manufacturer's recommendations for the diameters being burst and replaced.

The pipe bursting tool shall be pulled through the sewer by a cable or rods located at the machine pit. The bursting unit shall pull the polyethylene (PE) pipe with it as it moves forward from the insertion pit. The bursting head shall incorporate a shield/expander to prevent collapse of the hole ahead of the new pipe insertion. The pipe bursting unit shall be remotely controlled. Sectional replacement pipe shall be pushed as well as pulled behind the bursting head.

The bursting action of the tool shall increase the external dimensions sufficiently to break the existing pipe and simultaneously expand the surrounding ground sufficiently to permit pulling the new pipe through the annular space.

2.0 PIPE MATERIALS

2.01 GENERAL:

- a. Sizes of the insertions to be used shall be as shown on the plans or to renew the sewer to its original or greater than flow capacity.
- b. All pipe shall be made of virgin material. No rework except that obtained from the manufacturer's own production of the same formulation shall be used.
- a. The pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
- c. Material color shall be white or green.

1) POLYETHYLENE (PE) PLASTIC PIPE

- a. Polyethylene Plastic Pipe shall be high density polyethylene pipe and meet the applicable requirements of ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter, ASTM D1248, ASTM D3550.
- b. Dimension Ratios: The minimum wall thickness of the polyethylene pipe shall meet the following:

<u>Depth of Cover (Feet)</u>	<u>Minimum SDR of Pipe</u>
0 - 16.0	17
> 16.1	11

2.03 TESTS: Tests for compliance with this specification shall be made as specified herein and in accordance with the applicable ASTM Specification. A certificate with this specification shall be furnished, upon request, by the manufacturer for all material furnished under this specification. Polyethylene plastic pipe and fittings may be rejected for failure to meet any requirements of this specification.

3.0 EXECUTION

3.01 SERVICE CONNECTIONS

- a. All sewer service connections shall be identified, located and excavated prior to the pipe insertion to expedite reconnection. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the engineer and/or his representative. Upon completion of insertion of the new pipe, the Contractor shall expedite the reconnection of services to minimize any inconvenience to the customers.
- b. Service laterals shall be connected by the use of a prefabricated mechanical saddle. Mechanical saddles shall be made of polyethylene pipe compound that meets the requirements of ASTM D1248, Class C or polyvinyl chloride pipe compound that meets the requirements of ASTM D3034. Mechanical saddles shall have stainless steel straps and fasteners, neoprene gasket and backup plate. Mechanical saddles shall be Strap-On-Saddle Type or Tapping Saddle as manufactured by Fernco Joint Sealer Co., DFW Plastics, Inc. or approved equal. Once the saddle is secured in place, drill hole full inside diameter of saddle outlet in pipe liner.

3.02 BYPASSING SEWAGE:

- a. By-Pass Pumping: The Contractor, when and where required, shall provide diversion for the pipe bursting/replacement process. The pumps and by-pass lines shall be of adequate capacity and size to handle all flows. All costs for by-pass pumping, required during installation of the pipe shall be subsidiary to the pipe reconstruction item.
- b. The Contractor shall be responsible for continuity of wastewater service to each facility connected to the section of sewer during the execution of the work.
- c. If sewage backup occurs and enters buildings, the Contractor shall be responsible for clean-up, repair, property damage cost and claims.

3.03 TELEVISION INSPECTION: Television inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by closed circuit color television.

Television inspection shall include the following:

- a. Video tapes (post) to be submitted to the city before final invoice.
- b. Video tapes to remain property of the city; Contractor to retain second copy for his use.
- c. All flows tributary to reach of sewer being inspected are to be completely by-passed around the reach during inspection if necessary and required by City.
- d. Post construction video tape upon completion of reconstruction of each reach of sewer with the voice description, as appropriate with stationing of services indicated. Data and stationing to be on video.
- e. Should any portion of the inspection tapes be of inadequate quality or coverage, as determined by the City, the Contractor will have the portion reinspected and video taped at no additional expense to the City.

3.04 CONSTRUCTION METHODS:

- a. Insertion or launching pits shall only be allowed at locations approved by the Owner to minimize impact to existing trees.
- b. Equipment used to perform the work shall be located away from buildings so as to minimize noise impact. Provide silencers or other devices to reduce machine noise as required to meet requirements.
- c. The Contractor shall install all pulleys, rollers, bumpers, alignment control devices and other equipment required to protect existing manholes, and to protect the pipe from damage during installation. Lubrication may be used as recommended by the manufacturer. Under no circumstances will the pipe be stressed beyond its elastic limit.
- d. The installed pipe shall be allowed the manufacturer's recommended amount of time, but not less than four (4) hours, for cooling and relaxation due to tensile stressing prior to any reconnection of service lines, sealing of the annulus or backfilling of the insertion pit. Sufficient excess length of new pipe, but not less than four (4) inches, shall be allowed to protrude into the manhole to provide for occurrence.
- e. Following the relaxation period, the annular space may be sealed. Sealing shall be made with material approved by the Engineer and/or his representative and shall extend a minimum of eight (8) inches into the manhole wall in such a manner as to form a smooth, uniform, watertight joint.

3.05 FIELD TESTING:

- a. After the existing sewer is completely replaced, internally inspect with television camera and video tape as required. The finished tape shall be continuous over the entire length of the sewer between two manholes and to be free from visual defects.
- b. Defects which may affect the integrity or strength of the pipe in the opinion of the Engineer shall be repaired or the pipe replaced at the Contractor's expense.

3.06 PIPE JOINING

- a. The polyethylene pipe shall be assembled and joined at the site using the thermal butt-fusion method to provide a leak proof joint. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be used in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.
- b. The butt-fused joint shall be true alignment and shall have uniform roll-back beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. When cool, all weld beads shall then be removed from both the inside and outside surface such that the joint surfaces shall be smooth. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All joints shall be subject to acceptance by the Engineer and/or his representative prior to insertion. All defective joints shall be cut out and replaced at no cost to the City. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. In addition, any section of pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling as determined by the Engineer and/or his representative shall be discarded and not used.
- c. Terminal sections pipe that are joined within the insertion pit shall be connected with a full circle pipe repair clamp. The butt gap between pipe ends shall not exceed one-half (1/2) inch.

TECHNICAL SPECIFICATIONS FOR CURED IN PLACE PIPE (Inversion Method)

1.0 GENERAL

1.01 DESCRIPTION OF WORK: This work consists of furnishing all labor, material and equipment necessary for the reconstruction of wastewater mains by inverting a flexible polyester felt tube saturated with a thermosetting resin into the existing wastewater main, utilizing an inversion standpipe and a hydrostatic head or air pressure. The resin is cured by circulating hot water or introducing controlled steam within the tube. When cured and complete, the installed pipe shall extend from one manhole to the next in a continuous, tight-fitting, corrosion resistant, watertight pipe-with-in-a-pipe.

1.02 REFERENCE SPECIFICATIONS: This specification references American Society for Testing and Materials (ASTM) standard specifications, which are made a part hereof by such reference and shall be the latest edition and revision thereof.

F-1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

D-638 Test Method for Tensile Properties of Plastics.

D-790 Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

1.03 RELATED WORK:

- a. Cleaning
- b. Flow Control
- c. TV Inspection
- d. Submittals

1.04 NOISE: In accordance with Chapter 30-2 (h) of the Revised Code of Civil and Criminal Ordinances of the City of Dallas, Texas:

"The erection, including excavation, demolition, alteration or repair of any building in or adjacent to a residential area other than between the hours of 7:00 AM and 6:00 PM on weekdays, except in the case of urgent necessity in the interest of the public safety, shall require a letter of permission from the Director of Public Works of the City of Dallas.

1.05 SUBMITTAL DATA: Contractor and manufacturers of the selected wastewater rehabilitation lining are to furnish engineering data covering design and installation. Submittals shall be made in a timely manner so that project schedule can be met. The data shall include:

- a. Method of rehabilitation for each wastewater main segment.
- b. Diameter, length, wall thickness and all structural design calculations for each wastewater main segment. All design calculations shall be sealed by a Registered Professional Engineer of the State of Texas.
- c. Type of resin or pipe material.
- d. Method of sealing liner at manholes.

2.0 MATERIALS

2.01 FLEXIBLE FELT TUBE: The tube shall consist of one or more layers of flexible needled felt material or an equivalent nonwoven or woven material capable of carrying resin and withstanding installation pressures and curing temperatures. The felt tubular material shall be lined on one side with a translucent waterproof coating such as polyurethane or polyvinylchloride (PVC), and be fully impregnated with a liquid thermosetting polyester resin and catalyst system compatible with the inversion process. The resin must be able to cure in the presence of water and the initialization temperature for cure shall be less than 180°F (82.2°C). The tubing shall be properly sized to the diameter of the wastewater pipe and the length of the wastewater main to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends.

2.02 PROPERTIES: The cured pipe material shall meet the minimum chemical resistance requirements of ASTM F1216 Appendix X2 and shall conform to the minimum structural standards as listed below:

<u>CURED PIPE MATERIAL TEST</u>	<u>TEST METHOD STANDARD</u>	<u>RESULTS</u>
Flexural Stress	ASTM D 790	4,500 psi
Flexural Modulus of Elasticity	ASTM D 790	250,000 psi

2.03 TUBE DESIGN: The tube shall be designed in accordance with ASTM F1216 Appendix X1. The design shall be based on a fully deteriorated gravity pipe condition and shall withstand the following service requirements:

1. Soil Density - 130 lbs/cu. ft.
2. Live Loading - AASHTO HS20
3. Max. Depth of Soil Cover Above Top of Pipe - Use maximum depth between manholes as shown on plans.
4. Max. Ground Water Level - use maximum depth of soil cover between manholes.
5. Ovality - 2%
6. Modulus of Passive Soil Reaction - 700 psi
7. Minimum Safety Factor - 2

2.04 TESTS: Tests for compliance with this specification shall be made according to the applicable ASTM specification. A certificate of compliance with this specification shall be provided upon request by the manufacturer for all material furnished under this specification. In addition, the purchaser may, at his own expense, witness inspection and test of the materials, when requested at the time of purchase by the purchaser.

2.05 REJECTION: Any materials may be rejected for failure to meet any of the requirements of this specification.

3.0 EXECUTION

3.01 PREPARATORY PROCEDURES: The following procedures shall be adhered to unless approved otherwise by the Construction Engineer. Prior to the commencement of the actual liner inversion process, the Contractor shall plan his work after review of previous television inspection tape and reports. All point repairs must be satisfactorily completed, equipment and material mobilized, and the Construction Engineer shall be informed of the impending work schedules for liner installations.

- a. **Safety:** The Contractor shall carry out his operations in strict accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving working with scaffolding and entering confined spaces.
- b. **Cleaning:** it shall be the responsibility of the Contractor to clean the existing wastewater pipe and to remove all internal debris out of the wastewater main immediately before the television inspection, as specified elsewhere in these specifications and at a cost incidental to the insertion of the liner.
- c. **TV Inspection:** The Contractor shall provide inspection of wastewater mains by experienced personnel specially trained in locating breaks, obstacles, and service connections by closed circuit television, as specified elsewhere in these specifications. The interior of the wastewater main shall be carefully inspected to determine the

location and extent of any structural failures. The location of any condition which may prevent proper installation shall be noted so that such conditions can be corrected. A video tape and suitable log shall be supplied by the Contractor to the Owner.

- d. **Flow Control:** The Contractor shall provide for the flow of wastewater around the section or sections of pipe designated for inversion and effective TV inspection, as specified elsewhere in these specifications, and at a cost incidental to the insertion of the liner. The Contractor shall submit a flow control implementation plan for the Construction Engineer's approval prior to construction. At no time shall wastewater be pumped into the streets, alleys or storm drain systems. The pump and bypass lines shall be of adequate capacity and size to handle the flow. The Contractor shall take all necessary steps to prevent flooding of any residence or business and shall be liable for any damages incurred by same.
- e. **Line Obstructions:** It shall be the Contractor's responsibility to identify any point repairs required (such as heavy solids, dropped joints, intruding service connections, or collapsed pipe which prevents completion of the inversion process) or obstructions which must be removed prior to the lining process. This work must be approved in writing by the Construction Engineer and will be done by the Contractor. Such work shall be considered a separate pay item.
- f. **Water:** Water for the rehabilitation work shall be furnished by the City from the nearest fire hydrant. Hauling, if required, will be at the Contractor's expense. Installer shall use a double-check valve assembly to prevent backflow in the event of pressure failure. The backflow prevention device must be approved by the Construction Engineer.

3.02 INSTALLATION PROCEDURES:

- a. **Wet-Out:** The Contractor shall designate a location where the uncured resin in original containers and the fiber felt tube will be vacuum impregnated prior to installation. A resin/catalyst system compatible with the requirements of this method shall be used. The quantities of the liquid thermosetting material shall be sufficient to provide the thickness specified herein and to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall.
- b. **Inversion Using Hydrostatic Head:** The resin-impregnated felt tube shall be inserted through an existing manhole by means of an inversion standpipe capable of applying the hydrostatic head required to fully extend the tube to the next designated manhole or termination point. The tube shall be inserted in to the inversion standpipe with the impermeable plastic membrane side out. At the lower end of the inversion standpipe, the tube shall be turned inside out and attached to the inversion standpipe so that a leakproof seal is created. The inversion head shall be adjusted to be of sufficient height to invert the tube from manhole to manhole and to hold it tight against the existing pipe wall, producing dimples at side connections and flared ends at the manhole. Care shall be taken not to overstress the felt tube at the elevated curing

temperatures, which may cause damage or failure prior to cure.

- c. Inversion Using Air Pressure:** The resin impregnated tube shall be inserted through an existing manhole by means of an inversion process utilizing air pressure sufficient to fully extend the tube to the next designated manhole or termination point. The tube end shall be connected by an attachment so that a leakproof seal is created with the impermeable plastic membrane side out. The inversion pressure shall be adjusted to sufficient pressure to cause the impregnated tube to invert from manhole to manhole and hold the tube tight against the existing pipe wall producing dimples at side connections and flared ends at the manhole. Care shall be taken not to overstress the felt tube at the elevated curing temperatures, which may cause damage or failure prior to cure.
- d. Curing Using Circulating Heated Water:** After the inversion is completed, the Contractor shall supply a suitable heat source and water recirculation equipment capable of delivering heated water throughout the section to uniformly raise the water temperature above the temperature required to effect a cure of the resin. This temperature shall be as recommended by the resin/catalyst system manufacturer.

The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water supply. Another such gage shall be placed between the impregnated felt tube and the host pipe in the downstream manhole at or near the bottom to determine the temperatures during cure. Water temperature in the line during the cure period shall not be less than 150°F or more than 200°F as measured at the heat source return line.

Initial cure shall be deemed to be completed when inspection of the exposed portions of pipe appear to be hard and sound and the remote temperature sensor indicates that an exotherm has occurred. The cure period shall be of a duration recommended by the resin manufacturer, as modified for the installation process, during which time the recirculation of the water and cycling of the heat exchanger to maintain the temperature shall continue.

- e. Curing Using Steam:** After inversion is completed, the Contractor shall provide steam generating equipment to distribute steam throughout the section and uniformly raise the temperature within the pipe above the temperature required to effect a cure of the resin. The curing temperature shall be as recommended by the resin/catalyst system manufacturer. The steam generating equipment shall be fitted with a suitable monitor to gage the temperature of the outgoing stream. The temperature of the resin being cured shall be monitored by placing gages between the impregnated tube and the existing pipe at both ends. Initial cure shall be deemed to be completed when inspection of the exposed portions of pipe appear to be hard and sound and the remote temperature sensor indicates that an exotherm has occurred. The cure period shall be of a duration recommended by the resin manufacturer, as modified for the installation process, during which time the recirculation of the water and cycling of the heat exchanger to maintain the temperature shall continue.
- f. Cooldown After Heated Water Cure:** The Contractor shall cool the hardened

pipe to a temperature below 100°F before relieving the static head in the inversion standpipe. Cooldown shall be accomplished by the introduction of cool water into the inversion standpipe to replace water being drained from a small hole made in the downstream end. Care shall be taken in the release of the static head so that a vacuum will not be developed that could damage the newly installed pipe.

- g. Cooldown After Steam Cure:** The hardened cured-in-place liner shall be cooled down to a temperature below 100°F before relieving the internal pressure. Cooldown may be accomplished by the introduction of cool water into the section to replace the mixture of air and steam being drained from a small hole at the opposite end of the cured-in-place pipe, so that a constant internal pressure is maintained until cooldown is completed. Care shall be taken in the release of the internal pressure so that a vacuum will not develop that could damage the newly installed pipe.

3.03 SEALING PIPE IN MANHOLES: The liner shall be cut flush with the existing pipe at the manhole walls. The invert of the manhole shall be reworked (smoothed and built up) to match the flow line of the new liner pipe. If, due to broken or misaligned wastewater pipe at the manhole, the installed pipe fails to make a tight seal, the Contractor shall apply a sealant at that point. The sealant shall be compatible with materials used in the lining process and shall be approved in writing by the Engineer.

3.04 SERVICE CONNECTIONS: After curing (and after the pressure test specified below), the Contractor shall reinstate the existing live building laterals designated by the Construction Engineer. All lateral services shall be reinstated within 24 hours of beginning the inversion process. All lateral re-instatement shall be performed externally unless otherwise shown on the plans or as directed by the construction engineer. A portion of the existing wastewater main around each service connection shall be removed to expose the liner pipe and provide sufficient working space for making the new service connection.

Service laterals shall be connected by the use of a prefabricated polyethylene saddle. Mechanical saddles shall be made of polyethylene pipe compound that meets the requirements of ASTM D1248, Class C, have stainless steel straps and fasteners, neoprene gasket and backup plate. Mechanical saddles shall be Strap-On-Saddle Type as manufactured by Driscopipe or Tapping Saddle manufactured by Fernco Joint Sealer Co., DFW Plastics, Inc. or approved equal. Once the saddle is secured in place, drill hole full inside diameter of saddle outlet in pipe liner.

Prior to backfilling where the existing wastewater main has been broken open, the adjacent annular space between the existing wastewater main and the new liner shall be sealed to preclude migration of the backfill material into this annular space. This annular space may be sealed with cement or expandable foam; or the upper half of the wastewater pipe may be replaced and grouted. The entire exposed service connection shall be encased in modified flowable backfill for a minimum of 6" below and 12" above and on the sides of the pipe.

If the contractor is directed to internally re-instate lateral connections, the work shall be performed without excavation, from the interior of the pipe by means of a television camera and a cutting device that reinstates the building laterals to not less than 90% of their original

capacity. The Contractor shall certify that he has a minimum of two (2) complete working units plus spare key components on the site before each inversion.

4.0 FINAL ACCEPTANCE

4.01 FINISH: The finished pipe shall be continuous over the entire length of an inversion run between two manholes and be as free as commercially practicable from significant defects.

Any defects which will affect, in the foreseeable future, or warranty period, the integrity or strength of the pipe shall be repaired at the Contractor's expense, in a manner mutually agreed upon by the Construction Engineer and the Contractor.

4.02 TESTING: The water tightness of the liner shall be gauged while curing and under a positive head. To ascertain that there is no leakage, the water pressure inside the pipe shall be held at 4.3 pounds per square inch for a duration of at least four (4) hours testing time.

4.03 INSPECTION: After the work is completed, the Contractor shall provide the Construction Engineer with a videotape showing both the before and after condition, including the reinstated building lateral connections.

4.04 CLEANUP: After the installation work has been completed and all testing acceptable, the Contractor shall clean up the entire project area. All excess material and debris not incorporated into the permanent installation shall be disposed of by the Contractor.

**PROPOSAL
FOR
WASTEWATER MAIN REHABILITATION
AND ROUTINE WATER
AND WASTEWATER MAIN
APPURTENANCE ADJUSTMENTS
FOR
ELAM ROAD FROM
SAINT AUGUSTINE ROAD
TO ACRES DRIVE
CONTRACT NO. 07-013F / 07-014F**

**water utilities department
CITY OF DALLAS, TEXAS**

**ELAM ROAD FROM
 SAINT AUGUSTINE ROAD TO ACRES DRIVE
 CONTRACT NO. 07-013F / 07-014F**

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
352D	260	LF	For Rehabilitating 12" Wastewater main, complete in place, the sum of _____ DOLLARS AND _____ CENTS per linear foot		
354D	20	LF	For Point Repair of 12" Wastewater Main, complete in place, the sum of _____ DOLLARS AND _____ CENTS per linear foot		
354E	20	LF	For Point Repair of 15" Wastewater Main, complete in place, the sum of _____ DOLLARS AND _____ CENTS per linear foot		

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
355A	1	EA	For Removal of Internal Obstructions, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
357F	2,790	LF	For Pipe Bursting 12" to 12" Wastewater Main, complete in place, the sum of _____ DOLLARS AND _____ CENTS per linear foot		
357H	2,050	LF	For Pipe Bursting 15" to 15" Wastewater Main, complete in place, the sum of _____ DOLLARS AND _____ CENTS per linear foot		

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
505AA	1	EA	For Water Service, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
606A	1	EA	For Wastewater Lateral, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
607A	38	EA	For External Wastewater Lateral Connection, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
607B	1	EA	For Internal Wastewater Lateral Connection, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
613A	8	EA	For furnishing and placing 48" Wastewater Manhole, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
613AP	4	EA	For furnishing and placing 48" Wastewater Manhole with paving, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
613BP	2	EA	For furnishing and placing 60" Wastewater Manhole with paving, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
614B	14	EA	For Vacuum Test for Wastewater Manhole, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
692A	5,090	LF	For Television Inspection, complete in place, the sum of _____ DOLLARS AND _____ CENTS per linear foot		
704B	20	CY	For furnishing and placing Flowable Backfill, complete in place, the sum of _____ DOLLARS AND _____ CENTS per cubic yard		
752A	10	TN	For Temporary Paving, complete in place, the sum of _____ DOLLARS AND _____ CENTS per ton		

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
757	20	CY	For furnishing and placing Reinforced Concrete Paving, complete in place, the sum of		
			_____ DOLLARS		
			AND _____ CENTS per cubic yard		
771C	100	LF	For furnishing and placing Silt Fence and Hay Bales, complete in place, the sum of		
			_____ DOLLARS		
			AND _____ CENTS per linear foot		
2033	13	EA	For Adjusting Water Valve Covers and Stacks, complete in place, the sum of		
			_____ DOLLARS		
			AND _____ CENTS per each		
2036	6	EA	For Adjust Wastewater Manhole with 24" Lid, complete in place, the sum of		
			_____ DOLLARS		
			AND _____ CENTS per each		

ITEM NO.	QUAN-TITY	UNIT	DESCRIPTION AND PRICE IN WORDS	UNIT PRICE	TOTAL AMOUNT
2050	4	EA	For Investigation, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
2054	13	EA	For Altering Water Valve Covers and Stacks, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		
2063	3	EA	For Relocating Type 1 Air Release Valve, complete in place, the sum of _____ DOLLARS AND _____ CENTS per each		

SUMMARY OF BID FOR AWARD EVALUATION
CONTRACT NO. 07-013F and 07-014F

TOTAL AMOUNT OF BID FOR:

Items No.(s) 352D Thru 2063 \$ _____.

_____ **DOLLARS**

I Acknowledge Receipt Of:

Addendum No.	_____	Addendum No.	_____
Addendum No.	_____	Addendum No.	_____
Addendum No.	_____	Addendum No.	_____

Name of Bidder