



September 22, 2025

**CITY OF SWEETWATER, TEXAS
TWDB CWSRF WASTEWATER SYSTEM IMPROVEMENTS
CID 02: WASTEWATER COLLECTION SYSTEM IMPROVEMENTS
TWDB CWSRF CONTRACT NO. 73892**

Addendum No. 1

Attention is called to the following modifications to the referenced Plans, Specification and Contract Documents for the above referenced project. The City of Sweetwater (City) will receive sealed Bids for the Wastewater Collection System Improvements Project at **Sweetwater City Hall** located at **200 E. 4th Street, Sweetwater, Texas 79556**, until **Tuesday, October 7th, 2025**, at **2:00 p.m.** local time. We hereby modify the documents as follows:

SPECIFICATIONS:

1. **REMOVE** Section 02959 *Sewer Line Cleaning and Television Inspection*. Camera inspection of the existing piping is not required.
2. **ADD** Section 02607 *Sanitary Sewer Fiberglass Manholes and Covers*.

DRAWINGS:

1. **REPLACE** plan page 05 *Crane Street Plan and Profile* in its entirety with the attached.
2. **REPLACE** plan page 08 *Lewis Front Street Plan and Profile* in its entirety with the attached.
3. **REPLACE** plan page 09 *Miscellaneous Details* in its entirety with the attached.

ATTACHMENTS:

1. **ADD** Boring Log Exhibit

CLARIFICATIONS:

1. The use of fiberglass manholes in lieu of concrete is acceptable
2. On Sheet 05, the area of piping noted with inadequate depth will be covered with concrete only; no asphalt.

This addendum consists of twenty-two (22) pages and becomes a part of the referenced plans, specifications and contract documents and shall be acknowledged by the proposer and attached to the sealed proposal submitted.

Brittany D. White

By Brittany White, P.E.
Project Engineer



9/22/2025

SECTION 02607

SANITARY SEWER FIBERGLASS MANHOLES AND COVERS

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Furnishing of all work necessary to accomplish and complete the installation of fiberglass reinforced polyester (FRP) manholes, covers, anchorage, and accessories.

1.2 REFERENCES:

- A. ASTM A48--Gray Iron Castings.
- B. ASTM C923--Resilient Connectors Between Manhole Structures and Pipes.
- C. ASTM C1244--Standard Test Method for Sewer Manholes by Negative Air Pressure (Vacuum) Test.
- D. A. ASTM D-3753: Standard Specification for Glass-Fiber Reinforced Polyester Manholes.
- E. ASTM C-581: Practice for Determining Chemical Resistance of Chemical Thermosetting Resins Used in Glass-Fiber Reinforced Structures Intended for Liquid Service.
- F. ASTM D-2412: Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading.
- G. ASTM D-695: Test Methods for Compressive Properties of Rigid Plastics.
- H. ASTM D-2584: Test Method for Ignition Loss of Cured Reinforced Resins.
- I. ASTM D-790: Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and electrical Insulating Materials.
- J. ASTM D-2583: Test Method for Indentation Hardness of Rigid Plastics by means of a Barcol Impressor.
- K. AASHTO H-20: Axial Loading.
- L. 30 TAC 217.--Texas Administrative Code, Volume 30, Chapter 217, Design Criteria for Domestic Wastewater Systems. 217.55 – Manholes and Related Structures.
- M. 30 TAC 217.--Texas Administrative Code, Volume 30, Chapter 217, Design Criteria for Domestic Wastewater Systems. 217.58 – Testing Requirements for Manholes.

1.3 SUBMITTALS FOR REVIEW:

- A. Section 01300 - *Submittals*: Procedures for Submittals.
- B. Product Data: Provide manhole covers, component construction, features, configuration, dimensions and manufacturer name and address.
- C. Certification:
 - 1. Certification shall be made the basis of acceptance. This shall consist of a copy of the manufacturer's test report or a statement by the supplier, accompanied by a copy of the test results, that the manhole has been sampled, tested, and inspected in accordance with the provisions of ASTM 3753 and this specification, and meets all requirements. Each certification so furnished shall be signed by an authorized agent of the supplier or manufacturer.

1.4 QUALIFICATIONS:

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.5 QUALITY ASSURANCE/QUALITY CONTROL:

- A. Examination: Each manhole component part shall be examined for dimensional requirements, hardness, and workmanship.
- B. Composition Control:
 - 1. Controls on glass and resin content shall be maintained for all manufacturing processes and for each portion of manhole fabrication. Records shall be maintained of these control checks. Proper glass content may be shown by glass usage checks, by glass and resin application rate checks, in accordance with the material composition test in ASTM 8.8.1.
 - 2. All required ASTM 3753 testing shall be completed and records of all testing shall be kept and copies of test results shall be presented to customer upon written request within a reasonable time period.

1.6 HANDLING AND STORAGE:

- A. Do not drop or impact the fiberglass manhole. Lift manhole with two slings on spreader bar in horizontal position or by use of 4" x 4" timber inserted crosswise inside the manhole to the underside of the collar with a rope or chain attached to backhoe or other lifting device. Manhole may be rolled, however, insure that ground is smooth and free of rocks, debris, etc. Use of chains or cables in contact with manhole surface is prohibited.

PART 2 PRODUCTS

2.1 MATERIALS:

A. Manhole Manufacturers:

1. L.F. Manufacturing, Inc., Giddings, Texas
2. Containment Solutions, Inc., Conroe, Texas
3. or approved equal.

B. Ring and Cover Manufacturers:

1. East Jordan Iron Works.
2. Neenah Foundries.
3. Vulcan Foundries.
4. or approved equal.

C. Resilient Connector Manufacturers:

1. INSERTA TEE.
2. A-Lock.
3. Kor-N-Seal
4. or approved equal.

2.2 COMPONENTS:

A. Manhole:

1. Dimensions: The manhole shall be a circular cylinder, reduced at the top to a circular manway not smaller than 30" inside diameter. Manholes shall be produced in half foot increments of length +/- 2". Nominal inside diameter shall be 48". Tolerance on the inside diameter shall be +/- 1%. The minimum wall thickness for all FRP manholes at all depths shall be 0.480".
2. Configuration:
 - a. Cone Sections: The manway reducer must provide a bearing surface on which a standard ring and cover may be supported and adjusted to grade. The reducer shall be concentric and shall be joined to the barrel section at the factory with resin and glass fiber reinforcement, thus providing required monolithic design to prevent infiltration and/or exfiltration through the manhole.
 - b. Manway reducer cone section shall be self-centering to permit vertical height adjustment (raising or lowering) of manhole by contractor utilizing manufacturer provided materials and detailed written instructions.

3. Class: The manhole shall be manufactured in one class of load rating. This class shall be H-20 wheel load (minimum 16,000 pounds dynamic wheel load).
4. Connections:
 - a. Watertight, size-on-size resilient connectors allowing for differential settlement shall be used to connect pipe to manholes. Pipe to manhole connectors shall conform to ASTM C923 or shall be InsertaTee as shown in the plans and specification details.
 - b. Joints for sewer pipe for line and drop connections in sizes 4-inches to 18-inches shall be made by means of gasketed inserted watertight compression connection or approved equal as shown in the plans and details. Install in accordance with the manufacturer's written instructions.
5. Pipe Stubouts:
 - a. Install rubber gasketed PVC sewer pipe stubouts to manhole with resin and glass-fiber reinforced lay-up. Gaskets shall meet the same performance requirements of the sewer pipe to be installed unless otherwise directed by the Engineer. Resin and fiberglass shall be of the same type and grade as used in the fabrication of the fiberglass manhole.
 - b. Install PVC or fiberglass reinforced pipe stubouts for use with resilient pipe-to-manhole connectors (boots) which conform to the performance requirements of ASTM C923.
6. Manhole Bottom:
 - a. Manhole bottoms sections shall be furnished with an integral 3" wide anchoring flange.
 - b. Invert and bench shall be field installed utilizing concrete to the requirements of Division 03300.
 - c. Invert and bench may be factory installed utilizing non-corrosive materials encapsulated in fiberglass minimum 1/4" thick.
 - d. Units deeper than 25' may require additional reinforcement as required. Fiberglass ribs or fiberglass structural members may be utilized to meet the design criteria. Stiffeners shall be of non-corrosive materials encapsulated in fiberglass. FRP encapsulated wood or lumber will not be permitted.
7. Marking and Identification: All manholes shall be marked in letters no less than 1" in height with the following information:

- a. Manufacturers Identification
 - b. Manufacturers Serial Number
 - c. Manhole Length
 - d. ASTM Designation
 - e. Installation assist marks (vertical lines 90° apart at base of manhole).
8. Materials:
- a. Resin: The resins used shall be unsaturated, supplier certified, isophthalic polyester resins. Mixing lots of resin from different manufacturers, or "odd-lotting" of resins shall not be permitted. Quality-assurance records on the resin shall be maintained. Non-pigmented Resin is required to allow for light or "sand" color of manhole surface in order to facilitate easy from grade interior inspection. UV Inhibitors shall be added directly to resins to prevent photo degradation. Exterior gel-coating shall not be permitted.
 - b. Reinforcing Materials: The reinforcing materials shall be commercial grade "E" type glass in the form of mat, continuous roving, chopped roving, roving fabric, or both, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.
 - c. Surfacing Material: If reinforcing material is used on the surface exposed to the contained substance, it shall be a commercial grade chemical-resistant glass or organic surfacing mat having a coupling agent that will provide a suitable bond with the resin.
 - d. Fillers and Additives: Fillers, when used, shall be inert to the environment and manhole construction. additives, such as thixotropic agents, catalysts, promoters, etc., may be added as required by the specific manufacturing process to be used to meet the requirements of this standard. However, calcium carbonate mixed by the fabricator shall not be permitted. The resulting reinforced plastic material must meet the requirement of this specification.
 - e. Laminate: The laminate shall consist of multiple layers of glass matting and resin. The surface exposed to the sewer/chemical environment shall be resin rich and shall have no exposed fibers.
9. Manufacture: Manhole cylinders, manway reducers, and connectors shall be produced from glass fiber-reinforced polyester resin.
10. Interior Access: All manholes shall be designed so that a ladder can be supported by the installed manhole. Manway openings shall accommodate a heavy-duty, traffic rated ring and cover with 30-inch nominal size opening.

11. Manway Reducer: Manway reducers shall be concentric with respect to the larger portion of the manhole.
12. Cover Ring and Support: The manhole shall provide an area from which a typical ring and cover plate can be supported without damage to the manhole.

B. Requirements:

1. Exterior Surface: The exterior surface shall be relatively smooth with no sharp projections. Hand-work finish is acceptable if enough resin is present to eliminate fiber show. The exterior surface shall be free of blisters larger than 0.5" in diameter, delamination and fiber show.
2. Interior Surface: The interior surfaces shall be resin rich with no exposed fibers. Interior surface shall be smooth for improved corrosion resistance and reduced sludge build-up. The surface shall be free of crazing, delamination, blisters larger than 0.5" in diameter, and wrinkles of 0.125" or greater in depth. Surface pits shall be permitted up to 6' 2" if they are less than 0.75" in diameter and less than 0.0625" deep. Voids that cannot be broken with finger pressure and that are entirely below the resin surface shall be permitted up to 4' 2" if they are less than 0.5" in diameter and less than 0.0625" thick.
3. Repairs: Any manhole repair is required to meet all requirements of this specification.
4. Manhole Lengths: Manhole lengths shall be in whole or half foot increments +/- 2".
5. Load Rating: The complete manhole shall have a minimum dynamic load rating of 16,000 lbf. when tested in accordance with ASTM 3753, 8.4 (note 1). To establish this rating the complete manhole shall not leak, crack, or suffer other damage when load tested to 40,000 lbf and shall not deflect vertically downward more than 0.25" at the point of load application when loaded to 24,000 lb.
6. Stiffness: The cylindrical portion of the manhole is to be tested in accordance with ASTM Method D 2412. The manhole cylinder shall have the minimum pipe-stiffness values shown in the table below, when tested in accordance with ASTM 3753, Section 8.5, (note 1).

<u>Manhole Length (ft)</u>	<u>PSI</u>
3 - 6	0.72
7 - 12	1.26
3 - 20	2.01
21 - 25	3.02
26 - 35	5.24

7. Soundness: In order to determine soundness, an air or water test is to be applied to the manhole test sample. While holding the pressure between 3-5 psi, the entire manhole must be inspected for leaks. Any

leakage through the laminate is cause for failure of the test. Refer to ASTM 3753, Sec. 8.6.

8. Chemical Resistance: Per ASTM C 581; (see ASTM 3753, Section 8.7), Flexural strength, flexural modulus, and Barcol hardness are plotted versus time on log-log coordinates. The line defined by these points is extrapolated to 100,000 hours. The minimum extrapolation retention allowed for any of these properties is 50%. Test samples used are actual pieces of manhole or samples manufactured in a manner consistent in every way with the manhole component construction.
9. Physical Properties:

Flexural Strength (cone):	Hoop: 15.4 x 103 psi
	Axial: 17.2 x 103 psi
Flexural Strength (pipe):	Hoop: 22.5 x 103 psi
	Axial: 14.3 x 103 psi
Compressive Strength:	18.9 x 103 psi
10. Test Methods: All tests shall be performed as specified in ASTM 3753, Section 8, Titled "Test Methods". See ASTM 3753, Section 8, Note 5, for Test method D-790 and test method D-695.

C. Lid and ring:

1. ASTM A48, Class 30B cast iron construction, nominal 30-inch, machined flat bearing surface, heavy-duty ring and lid shall weigh at least 300 pounds; with a minimum live load rating of 20,000 pounds wheel load; removable lid; sealing gasket; lid molded with manufacturer's name; and the words "SANITARY SEWER."
2. Castings shall be of uniform quality, free from sand holes, shrinkage, cracks, cold cuts or other defects. Castings shall be smooth and well-cleaned by shot blasting.
3. Install a water-tight, bolted and gasketed manhole ring and cover where indicated on plans.
4. Grade adjustment rings shall be as specified in Section 02611.

PART 3 EXECUTION

3.1 EXAMINATION:

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify that excavation for manholes is correct.

- D. FRP manholes shall be inspected when delivered and all cracked or otherwise visible defective units will be rejected. Remove rejected materials from the Project.

3.2 PREPARATION:

- A. Coordinate placement of inlet and outlet pipes required by other sections.

3.3 INSTALLATION METHODS:

- A. General: The manhole installation should strictly follow the manufacturer's recommended installation procedures. Manufacturer's specific installation instructions must be consulted before actual installation is performed.
- B. In addition to these instructions, local codes may apply and should be consulted as applicable in manhole installation. Correct manhole installation requires proper concrete foundation, good backfill and proper handling to prevent manhole damage and insure long-term corrosion resistant service.
- C. Prepare excavation/make manhole pipe cut-outs for stubout connections: Prepare excavation in a normal manner. Excavation at manhole location should be at least wide enough to accommodate the slab specified and to provide working room around manhole. Insure the depth of manhole is sufficient to allow at least one HDPE adjustment ring for adjustment of ring and cover at top of final grade. Pipe cut-outs at the flowline are made in manhole prior to setting manhole in place over pipe in trench. Quarter marks have been provided on barrel to facilitate alignment of cut-outs.
- D. Subgrade materials shall be excavated to a uniform depth needed to permit the installation of Class II material, as specified in Section 02225 - *Excavation, Backfilling, and Compacting for Utilities* and shown, to attain proper line and grade.
- E. The elevation of the Class II material shall be adjusted as required to attain proper grade and alignment of the base section.
- F. Manhole foundation and manhole invert may be installed simultaneously if manhole section is supported on concrete blocks and foundation concrete is placed under and around bottom section.
- G. Set Manhole: To lift manhole, insert 4" x 4" timber crosswise inside the manhole to the underside of the collar with a rope or chain attached to backhoe or other lifting device. Lower manhole into wet concrete base to a minimum depth of 4" below the flow line. Minimum 2" thick concrete bearing surface beneath bottom edge of the manhole is required. Plumb manhole using standard bubble level and by moving manhole with hands. Work concrete around manhole base and 6 inch minimum over incoming lines. Inverts and laterals are made following standard procedures.
- H. Heat materials for casting in place in freezing weather and protect work from cold. Maintain temperature of work at 40 degrees F. for at least 24 hours after placement.

- I. Grout manhole inverts to achieve slope to exit piping. Grout shall be installed monolithically. Construct manhole foundation and channel inverts integrally for cast in place manhole foundations. See Standard Details in Plans and Specifications.
- J. Invert Channels: Inverts: The bottom of the manhole shall be provided with a "U" shaped channel that is as much as possible a smooth continuation of the inlet and outlet pipes.
 - 1. For manholes connected to pipes less than 15-inches in diameter the channel depth shall be at least half the largest pipe diameter.
 - 2. In manholes with pipes of different sizes, the tops of the pipes shall be placed at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe. The bench provided above the channel shall be sloped at a minimum of 0.5-inch per foot.
 - 3. Manhole inverts shall be filleted to prevent solids deposition.
 - 4. Drop Manholes: A drop manhole as shown in the details shall be provided for a sewer entering a manhole more than 24-inches above the invert.
- K. The connecting pipe for installation with resilient connectors shall be plain end, square cut spigots which shall not protrude more than one (1) inch inside the manhole wall.
- L. Make all connections watertight using rubber gasket or size-on-size resilient connectors allowing for differential settlement. All connections shall be at flowline of manhole.
- M. Stubs-outs for future connections shall be provided at the locations shown and be between three (3) and four (4) feet in length and terminated in a bell and plug.
- N. Set rings and covers level to correct elevations. Within the confines of a roadway, the cover of the manhole shall match the finish grade of the roadway.
- O. Coordinate with other sections or work to provide correct size, shape, and location.
- P. Backfill: Backfilling is done just as soon as the concrete base has hardened enough to provide sufficient support for manhole and fill. Sand, free of large stones and debris shall be used for backfill. Backfill should be placed evenly around manhole in 12" maximum lifts and should thoroughly tamped to 90% standard proctor density before the next layer is installed.
- Q. Bring to Grade: Construct chimney on flat shoulder of manhole using high density polyethylene (HDPE) grade adjustment rings (Refer to Section 02611 - *Manhole Grade Adjustment*).

3.4 INSPECTION:

- A. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer, or other representative of the owner. Such inspections shall be made at the place of manufacture, or at site of delivery, and the sections shall be subject to rejection on account of failure to meet any of the specification requirements. Sections rejected after delivery to the job site shall be marked for identification and shall be removed from the job at once. All sections which have been damaged after delivery will be rejected, and if already installed shall be acceptable if repaired or removed and replaced at the contractor's expense.
- B. At the time of inspection the material will be examined for compliance with the requirements of this specification and the approved drawings.

3.5 TESTING:

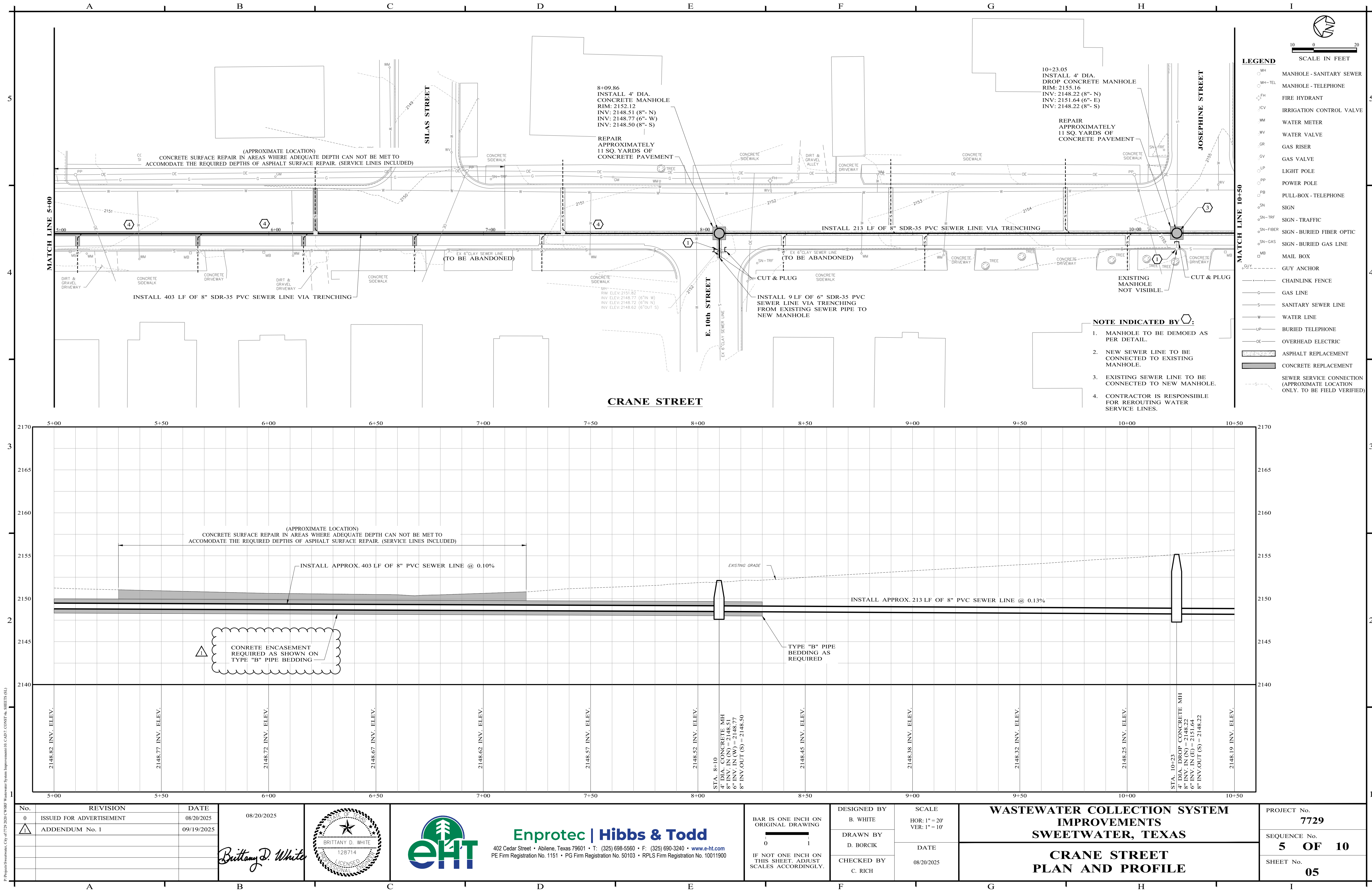
- A. Manholes shall be tested for leakage separately and independently of the wastewater lines by hydrostatic exfiltration testing, vacuum testing, or other approved methods. All testing shall be performed under the observation of the Engineer.
- B. Testing must meet the requirements of 30 TAC 217.58.
- C. If a manhole fails a leakage test, the manhole must be made water-tight and retested at the Contractor's expense.
- D. Hydrostatic Exfiltration Testing
 - 1. The maximum leakage for hydrostatic testing shall be 0.025 gallons per foot diameter, per foot of manhole depth per hour.
 - 2. All wastewater lines coming into the manhole shall be sealed with an internal pipe plug, then the manhole shall be filled with water and maintained full for at least one hour.
- E. Vacuum Testing
 - 1. Each manhole shall be tested immediately after assembly and prior to backfilling. The entire exterior of the manhole shall be exposed prior to vacuum testing.
 - 2. All pipes entering the manhole shall be plugged, taking care to securely brace the plugs to prevent them from being drawn into the manhole.
 - 3. Stubouts, manhole boots and pipe plugs shall be secured to prevent movement while the vacuum is drawn.

4. If the test cover used is to be attached to the top of the manhole with external clamps, the test cover shall be secured and properly torqued in place, in accordance with the manufacturers' recommendations.
5. The test cover shall be placed at the top of the cone section and sealed in accordance with the manufacturers' recommendation.
6. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches of mercury. The manhole shall pass if the time is greater than 2 minutes. If the manhole fails the initial test, necessary repairs shall be made while the vacuum is still being drawn. If the manhole fails a second time, repairs should again be made and the manhole shall be tested by means of a hydrostatic test. If any manhole fails the hydrostatic test, after failing the vacuum test twice, the Contractor should consider replacing that manhole. If the Contractor chooses to attempt to repair that manhole, the manhole must be retested by means of the hydrostatic test until it passes.

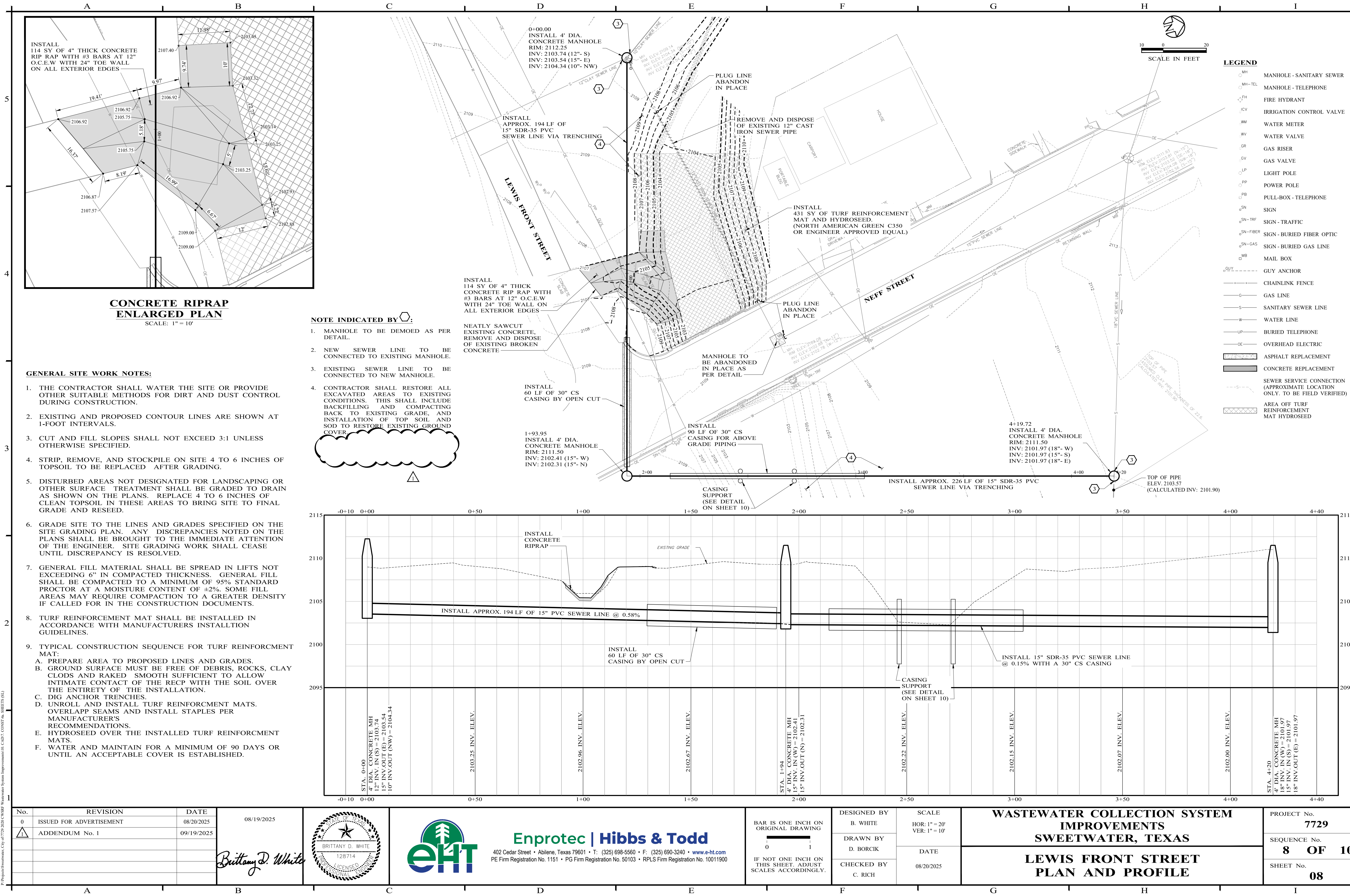
3.6 MEASUREMENT AND PAYMENT:

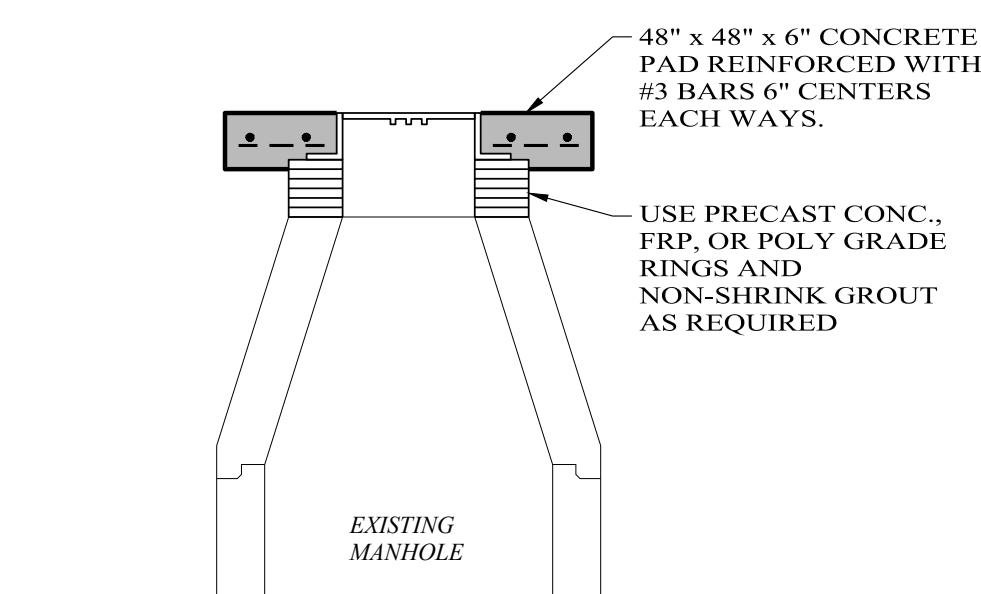
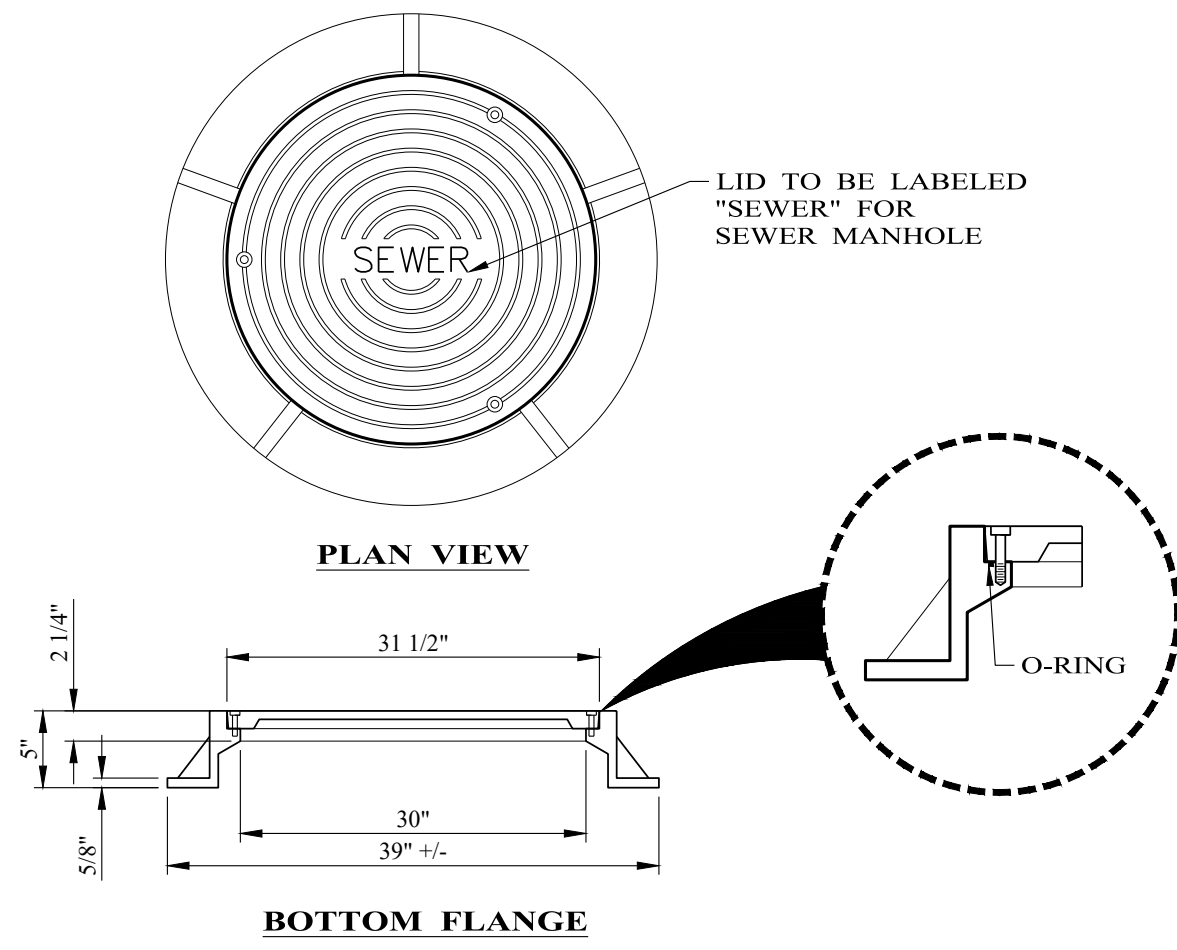
- A. Sanitary sewer manhole will be measured from the top of the ground to the sanitary sewer invert. Manholes shall be paid at the contract bid price per each at the various depths.

END OF SECTION

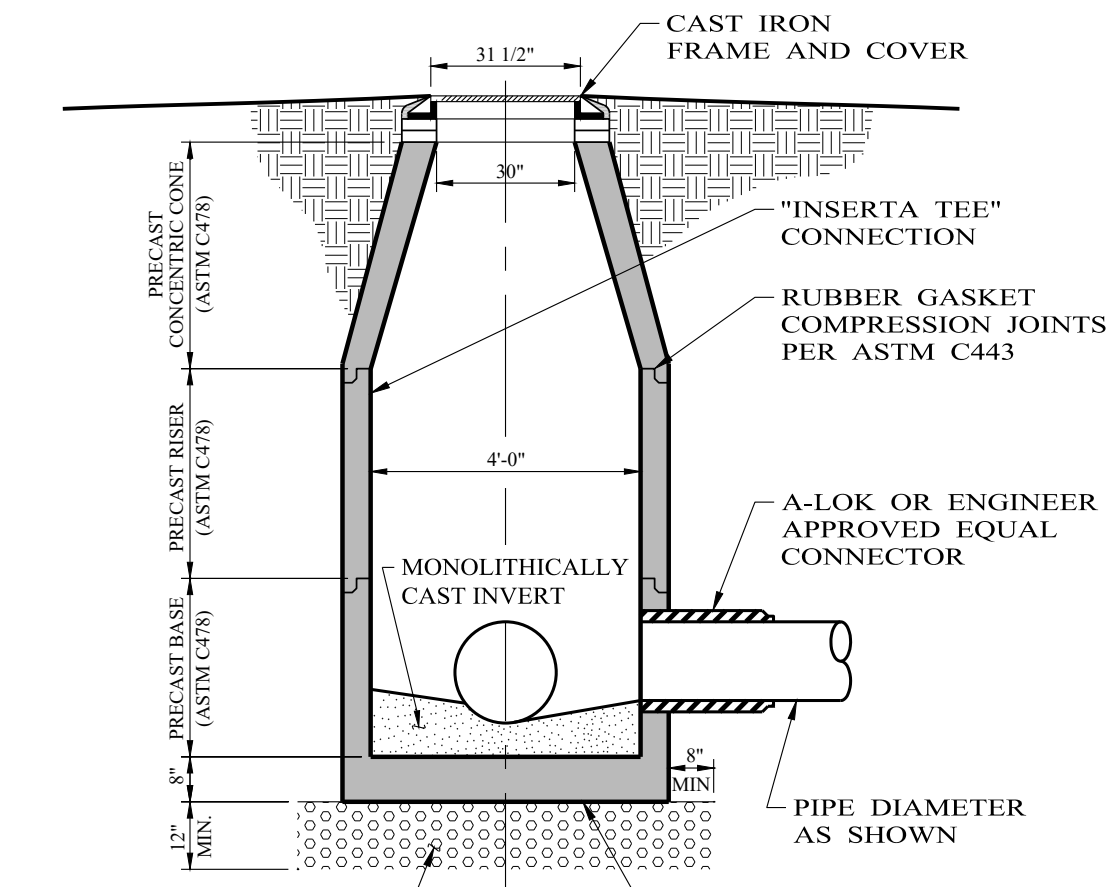


P:\Project\Sweetwater, City of\7729-2020\WWSIP\Waterworks System Improvements\10 CAD\CONST\as. SHEETS.dwg

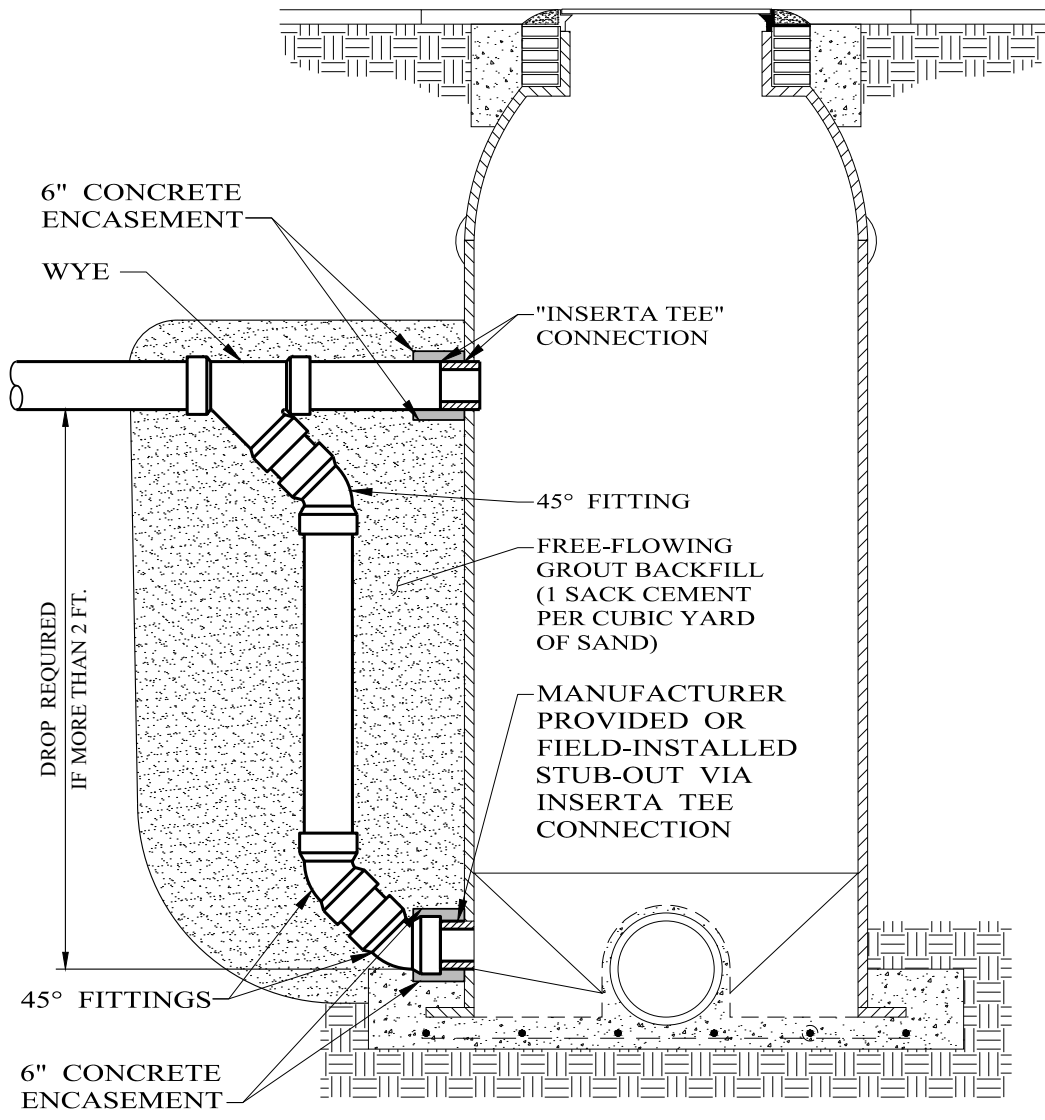




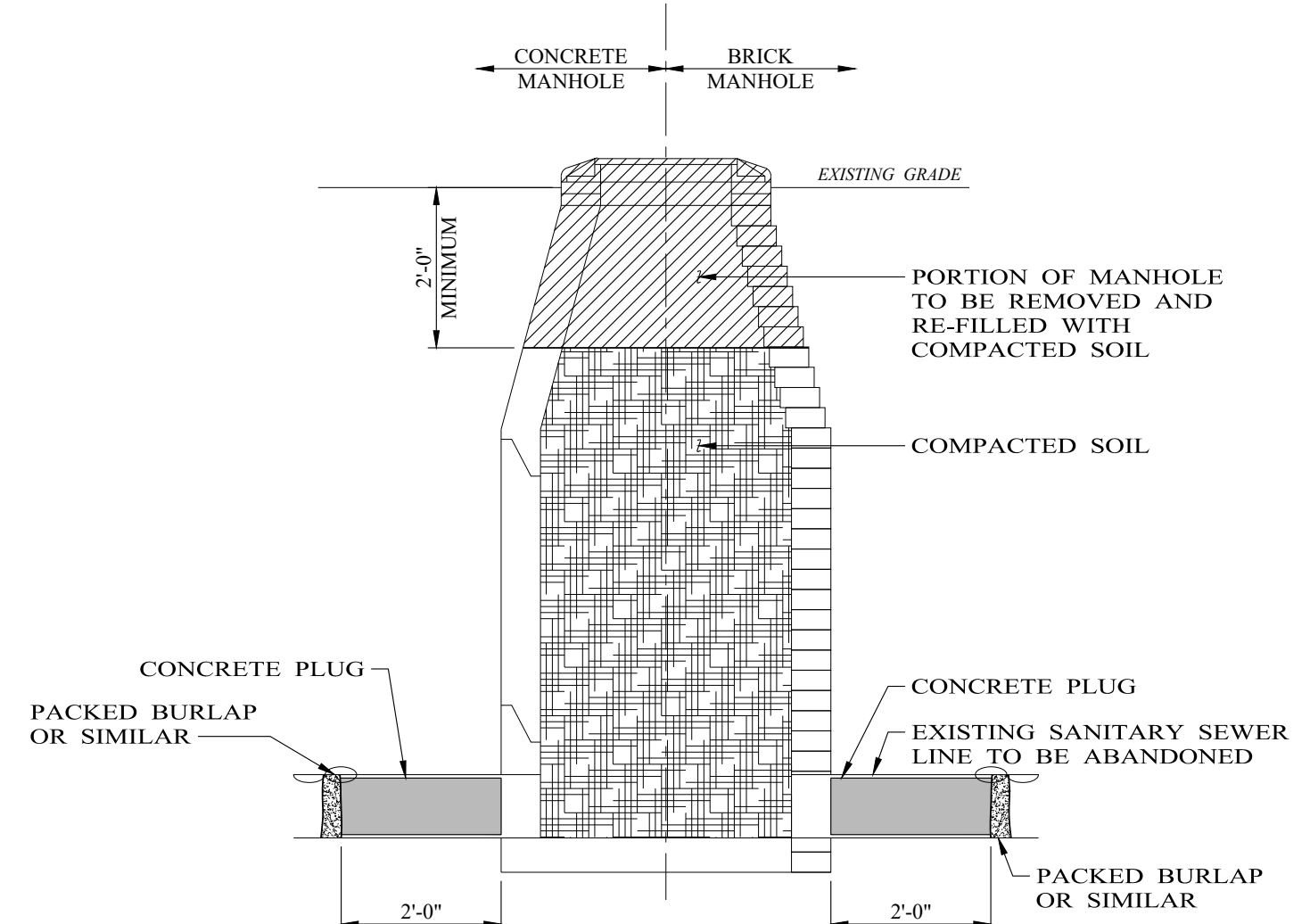
MANHOLE LID DETAIL
NO SCALE



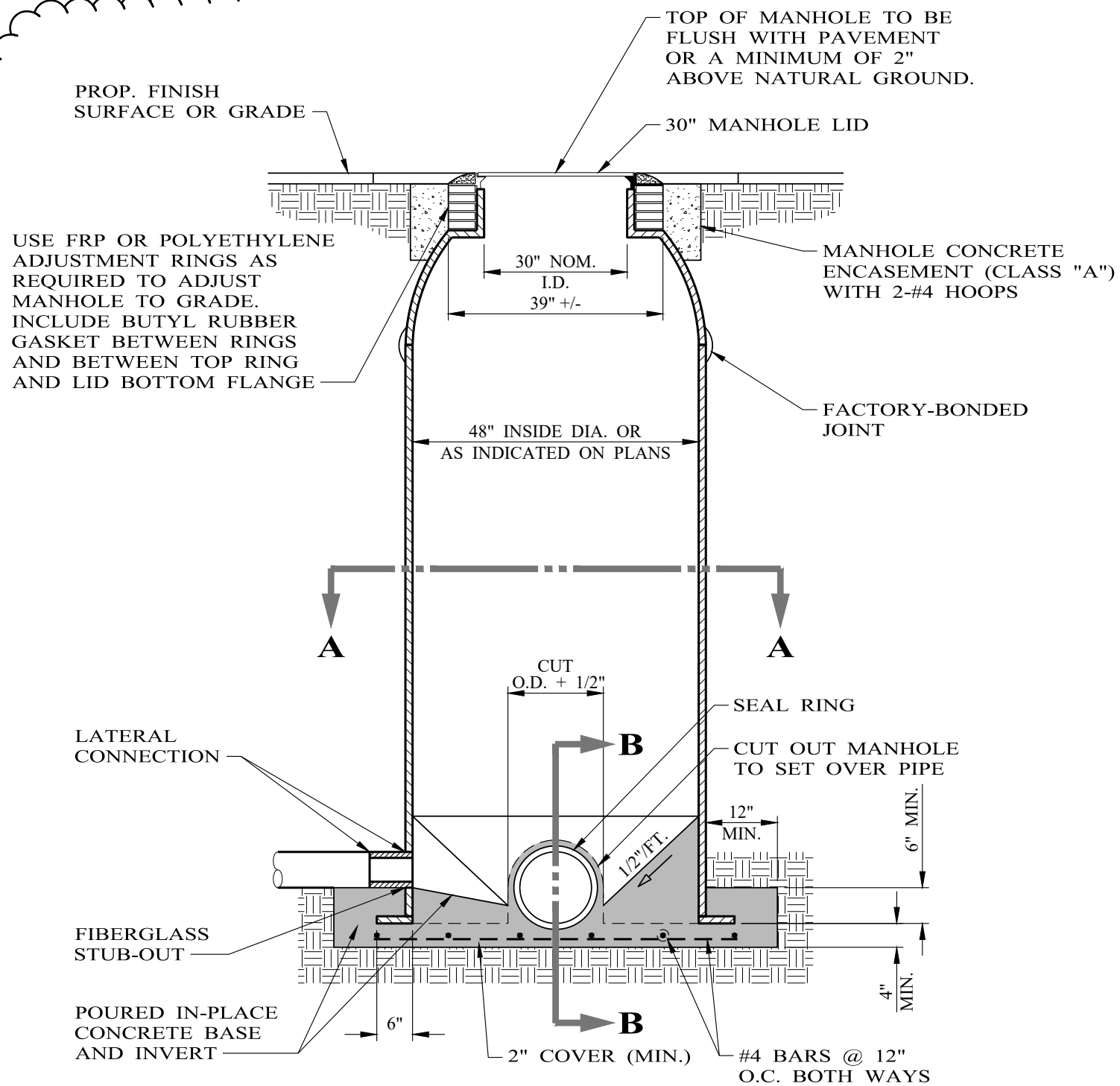
PRECAST CONCRETE MANHOLE DETAIL
NO SCALE



DROP STRUCTURE FOR MANHOLE
NO SCALE

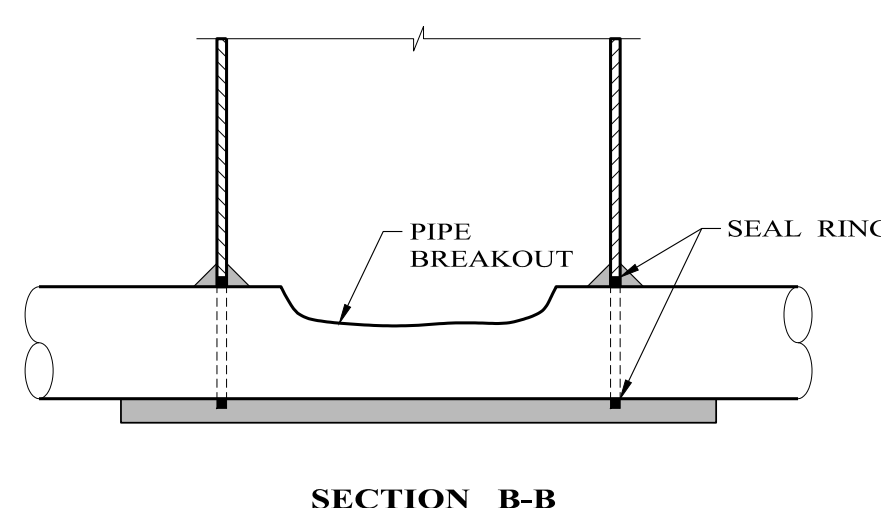
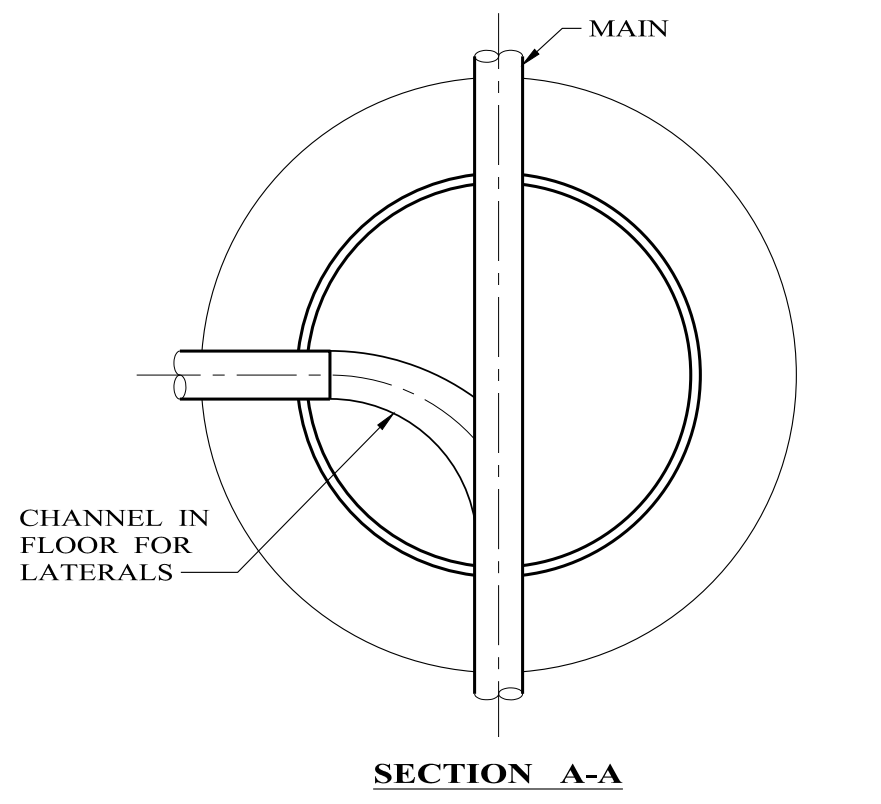


PIPE AND MANHOLE ABANDONMENT DETAIL
NO SCALE

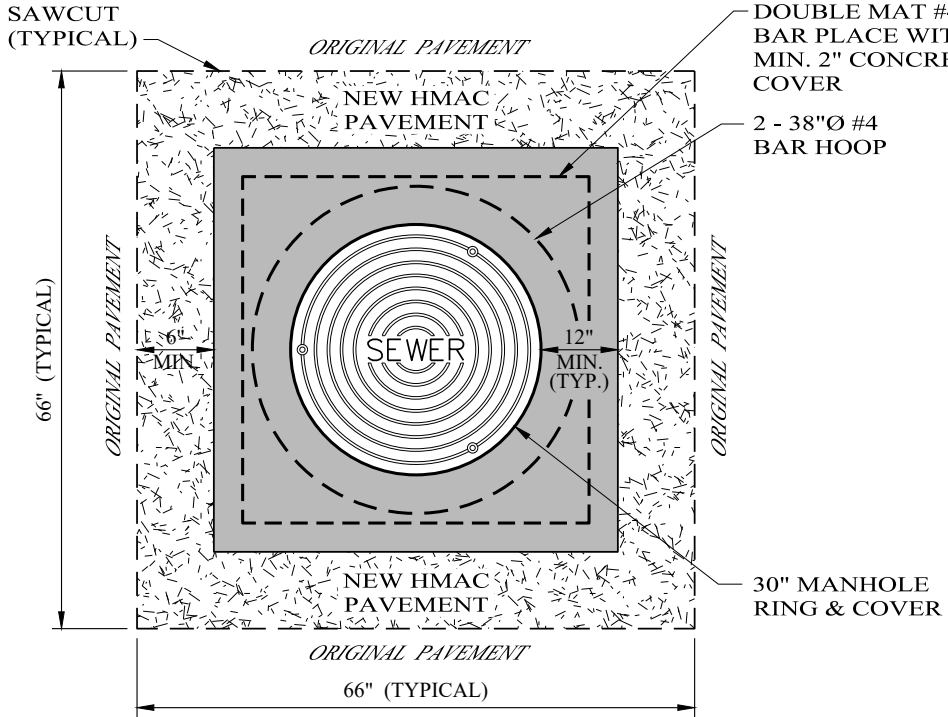


- NOTES**
1. MINIMUM THICKNESS OF FIBERGLASS MANHOLE IS 1/2".
 2. CONTRACTOR TO PROVIDE SUFFICIENT QUANTITY OF CONCRETE IN BASE SLAB TO RESIST FLOATATION. THICKNESS OF BASE SLAB SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLES BASED ON MANHOLE DEPTH AND BASE SLAB CONFIGURATION.
 3. MANHOLE TO BE H-20 TRAFFIC RATED.

6' DIA. ROUND BASE		6'x6' SQUARE BASE	
MH DEPTH	MIN. THICKNESS	MH DEPTH	MIN. THICKNESS
10'	10 INCHES	10'	10 INCHES
20'	14 INCHES	20'	10 INCHES
30'	21 INCHES	30'	10 INCHES



FIBERGLASS MANHOLE DETAIL



FIBERGLASS MANHOLE IN PAVEMENT
NO SCALE

No.	REVISION	DATE	08/20/2025			402 Cedar Street • Abilene, Texas 79601 • T: (325) 698-5560 • F: (325) 690-3240 • www.e-ht.com PE Firm Registration No. 1151 • PG Firm Registration No. 50103 • RPLS Firm Registration No. 10011900	BAR IS ONE INCH ON ORIGINAL DRAWING 0 1 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	DESIGNED BY B. WHITE	SCALE NO SCALE	WASTEWATER COLLECTION SYSTEM IMPROVEMENTS SWEETWATER, TEXAS	PROJECT No. 7729
0	ISSUED FOR ADVERTISEMENT	08/20/2025	ADDENDUM No. 1					09/19/2025	DRAWN BY D. BORCIK		DATE 08/20/2025
								CHECKED BY C. RICH			SHEET No. 09



ENPROTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
335-698-5560
Arlene, Texas 79801
PE Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Registration No. 10011500

NEFF / LEWIS STREET AREA MAP
CITY OF SWEETWATER
NOLAN COUNTY, TEXAS

BORING LOCATION EXHIBIT

7729

09/01/2021



**CRANE STREET AREA MAP
CITY OF SWEETWATER
NOLAN COUNTY, TEXAS**

BORING LOCATION EXHIBIT



ENPRTEC/HIBBS & TODD, INC.
ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
325-698-5560
Arlene, Texas 79501
PE Firm Registration No. 1151
PG Firm Registration No. 50103
RPLS Firm Registration No. 10011900



ENPROTEC/HIBBS & TODD, INC.

ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
Arlington, Texas 76010
(325) 698-5560 Firm Registration No. 1151

LOG OF BORING

Project: **WW SYSTEM IMPROVEMENTS**

Date: 09/16/2021

Location: **SWEETWATER, TEXAS**

Type: AIR ROTARY

Boring No.: **B-1**

DEPTH IN FEET	SYMBOL	SAMPLE	MATERIAL DESCRIPTION	N-BLOWS PER FOOT	TEXAS CONE PENETROMETER		Qp (tsf)	DEPTH SCALE
					1st 6"	2nd 6"		
5		ST	BROWN CLAYEY FINE SAND					3.5
		ST						2.0
		ST						1.5
		ST						0.5
		ST						0.5
10								
15		SS	- SLIGHTLY CEMENTED BELOW 14' RED-BROWN CLAYEY SAND	50/3"				
20								
TOTAL DEPTH OF BORING 20 FEET								
NOTE GROUNDWATER WAS PRESENT AT DEPTH OF ABOUT 9 FEET DURING AND AT COMPLETION OF DRILLING ACTIVITIES. NO SAMPLE AT 20' DUE TO WET CAVING SANDS.								



ENPROTEC/HIBBS & TODD, INC.

ENVIRONMENTAL AND CIVIL ENGINEERING
402 Cedar Street
(325) 698-5560
Arlene, Texas 79601
Firm Registration No. 1151

LOG OF BORING

Project: **WW SYSTEM IMPROVEMENTS**

Date: 09/16/2021

Location: **SWEETWATER, TEXAS**

Type: AIR ROTARY

Boring No.: **B-2**

DEPTH IN FEET	SYMBOL	SAMPLE	MATERIAL DESCRIPTION	N-BLOWS PER FOOT	TEXAS CONE PENETROMETER		Qp (tsf)	DEPTH SCALE
					1st 6"	2nd 6"		
5		ST	BROWN CLAYEY FINE SAND WITH TRACE CALCAREOUS NODULES				4.0	
		ST	TAN CLAYEY FINE SAND				1.5	
		ST	- VERY MOIST				2.5	
		ST	- SLIGHTLY CEMENTED BELOW 10'				4.5+	
		ST					4.5+	
10			RED-BROWN CLAYEY SAND					
15		SS		50/3"				
								
								
20		SS		50/4"				
TOTAL DEPTH OF BORING 20 FEET								
NOTE GROUNDWATER WAS PRESENT AT DEPTH OF ABOUT 9 FEET DURING AND AT COMPLETION OF DRILLING ACTIVITIES.								

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LOG OF BORING

Project: **WW SYSTEM IMPROVEMENTS**

Date: 09/16/2021

Location: **SWEETWATER, TEXAS**

Type: AIR ROTARY

Boring No.: **B-3**

DEPTH IN FEET	SYMBOL	SAMPLE	MATERIAL DESCRIPTION	N-BLOWS PER FOOT	TEXAS CONE PENETROMETER		Qp (tsf)	DEPTH SCALE
					1st 6"	2nd 6"		
			2 1/2" ASPHALT WITH 4" BASE MATERIAL					
5		ST	RED-BROWN CLAYEY SAND				4.5+	
		ST					4.5+	
		ST					4.0	
		ST					4.0	
10	TOTAL DEPTH OF BORING 10 FEET							
NOTE NO GROUNDWATER WAS PRESENT DURING OR AT COMPLETION OF DRILLING ACTIVITIES.								

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Firm Registration No. 1151

LOG OF BORING

Project: **WW SYSTEM IMPROVEMENTS**

Date: 09/16/2021

Location: **SWEETWATER, TEXAS**

Type: AIR ROTARY

Boring No.: **B-4**

DEPTH IN FEET	SYMBOL	SAMPLE	MATERIAL DESCRIPTION	N-BLOWS PER FOOT	TEXAS CONE PENETROMETER		Qp (tsf)	DEPTH SCALE
					1st 6"	2nd 6"		
5			1 1/2" ASPHALT WITH 4" BASE MATERIAL					
		ST					3.5	
		ST					1.5	
		ST	RED-BROWN CLAYEY SAND				0.5	
		ST					0.5	
		ST					0.5	
10	TOTAL DEPTH OF BORING 10 FEET							
NOTE NO GROUNDWATER WAS PRESENT DURING OR AT COMPLETION OF DRILLING ACTIVITIES.								