

ADDENDUM NO. 2
to the
CONTRACT DOCUMENTS, SPECIFICATIONS, AND CONSTRUCTION DRAWINGS
for construction of
Claybar Siphon
for
SABINE RIVER AUTHORITY
in
ORANGE COUNTY, TEXAS
October 7, 2024

Addendum No. 2 covers the following changes to the contract documents, technical specifications, and construction drawings:

CONSTRUCTION DRAWINGS

1. SHEET C14 – Miscellaneous Details

Remove and replace with the attached sheet.

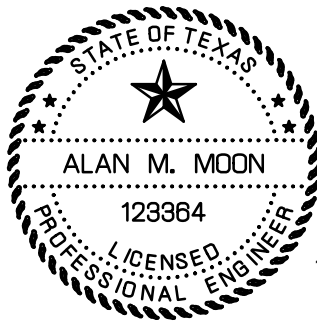
TECHNICAL SPECIFICATIONS

1. SPECIFICATION 02500 – Raw Water Conveyance Steel Siphons

Remove and replace Specification 02500 – Raw Water Conveyance Steel Siphons with the attached specification. Sections 1.5(D) and 1.5(E) were added to the specification. Section 3.1(C) was revised to include “Field weld full penetration butt welded joints for steel pipe for entire circumference.” Section 3.4(G) was added to the specification.

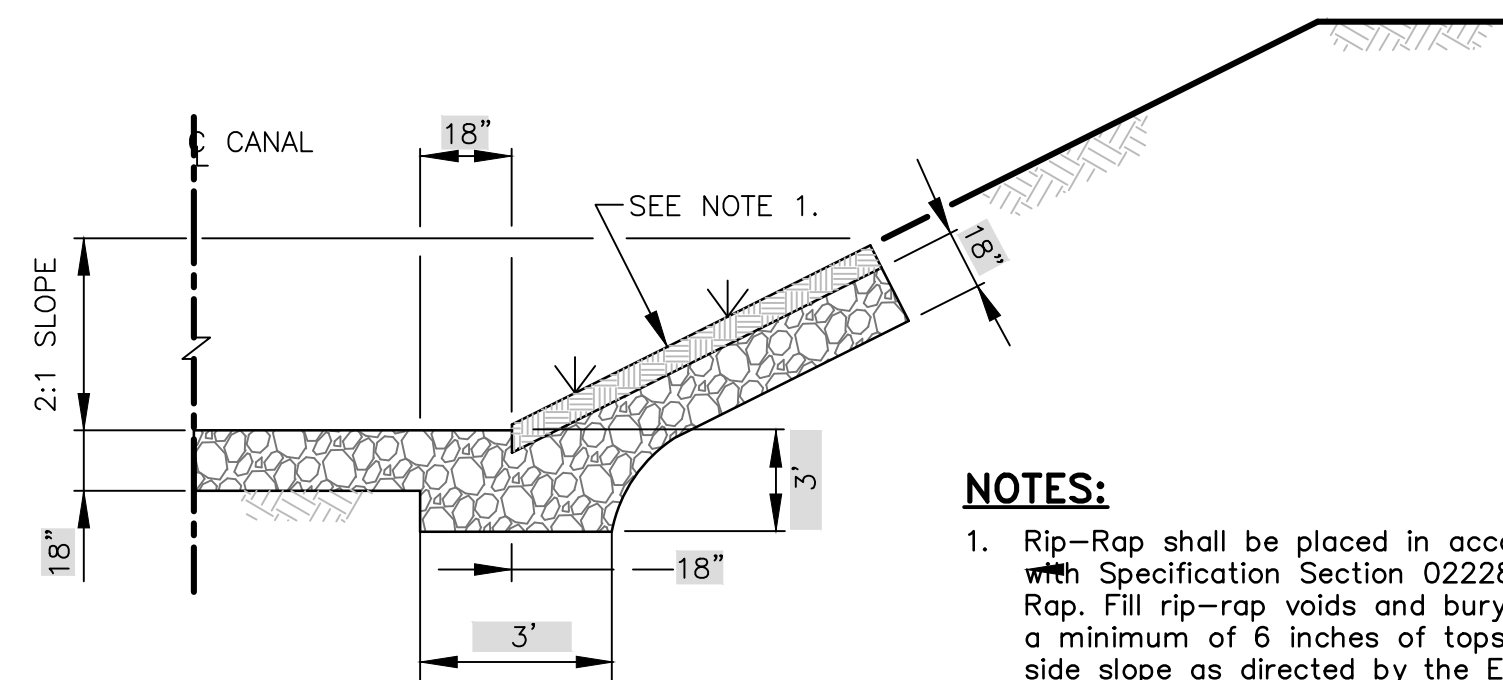
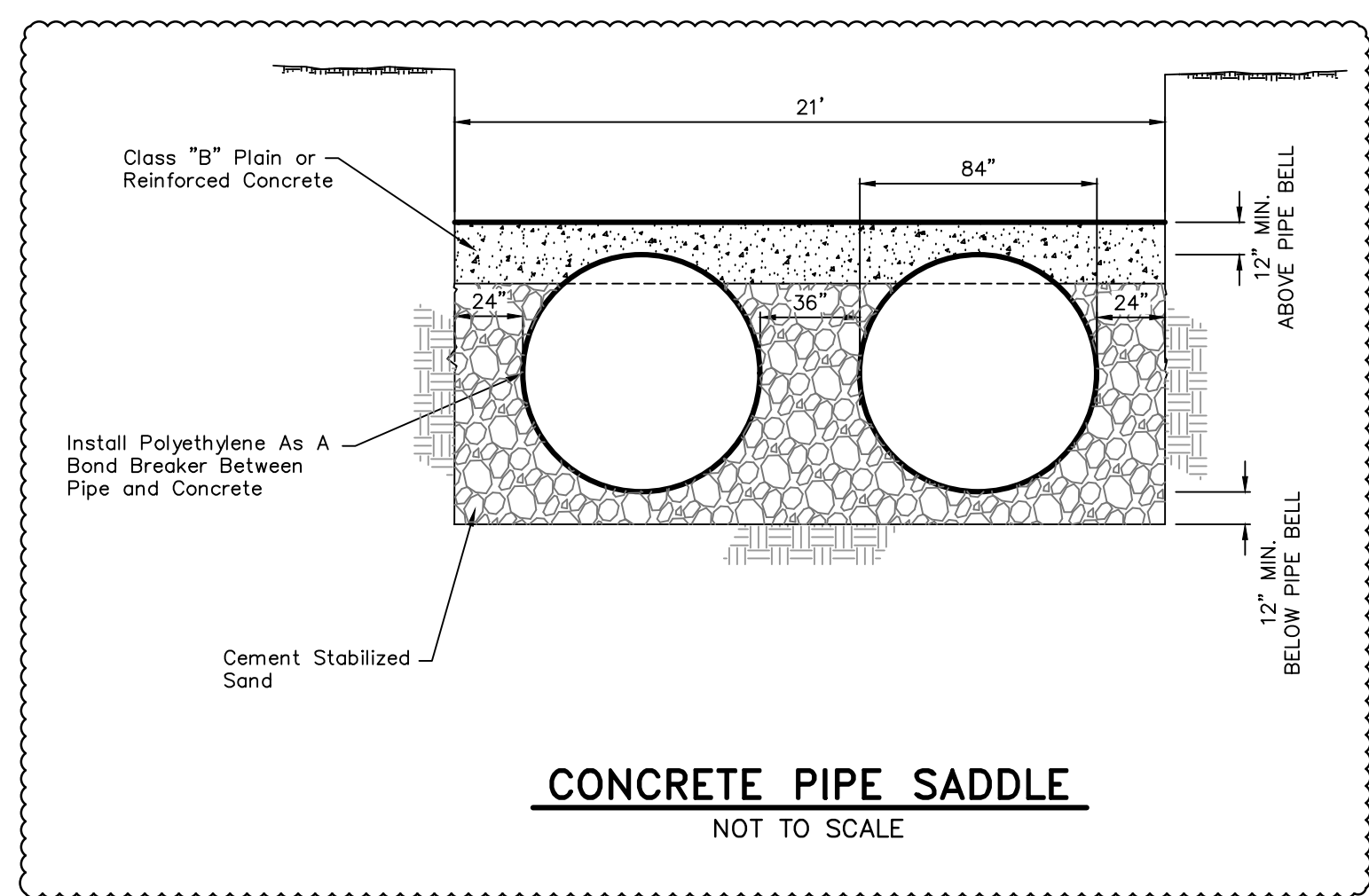


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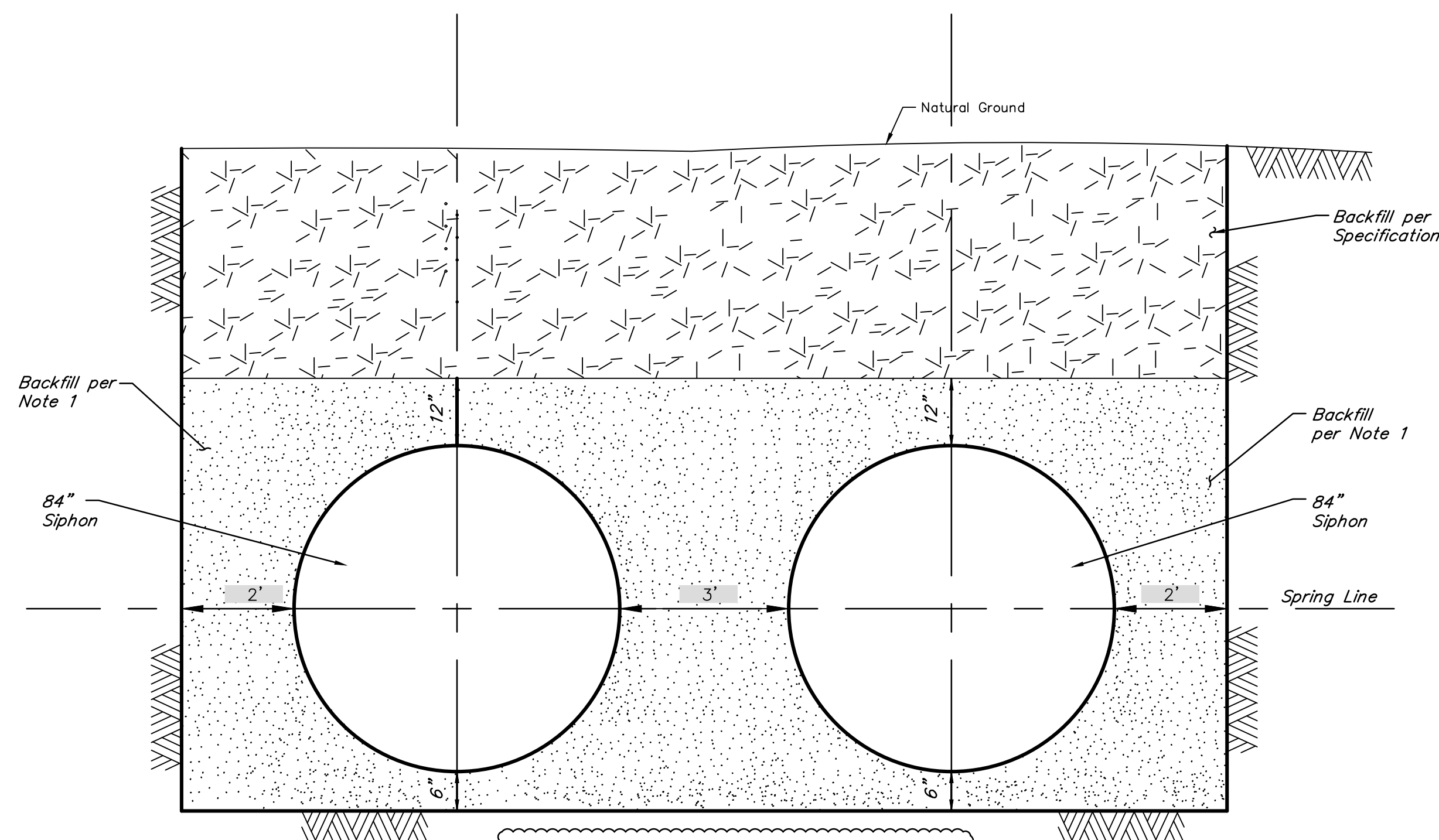
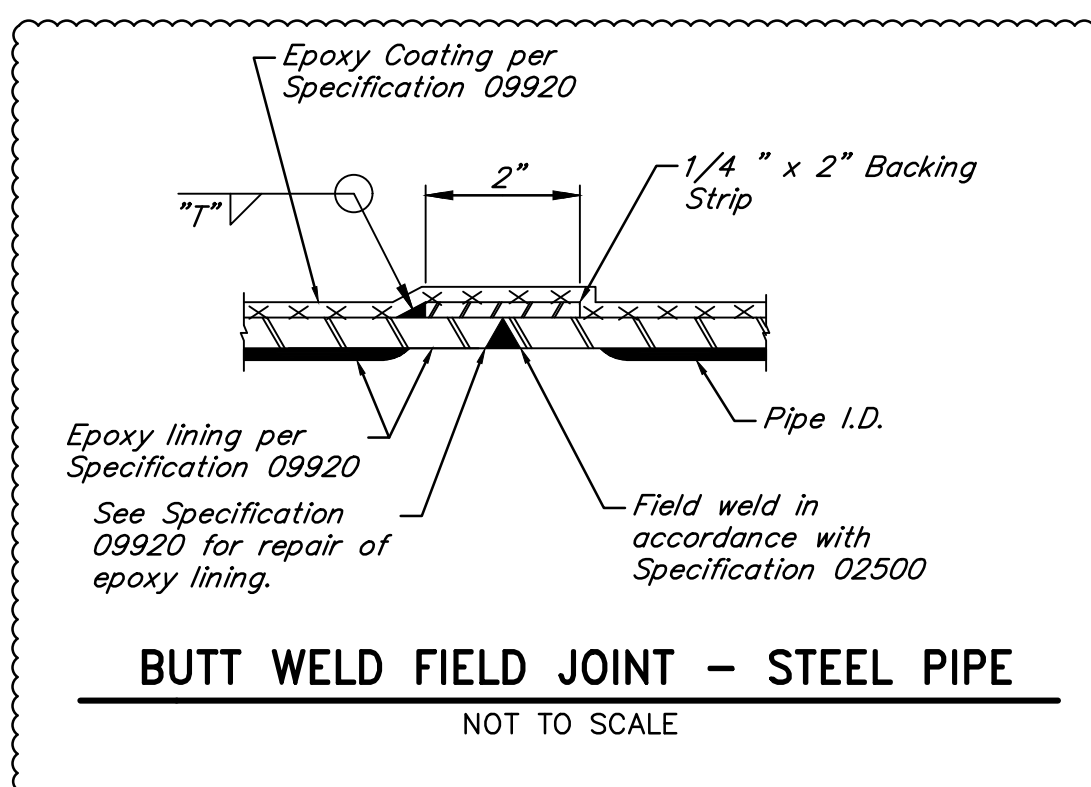
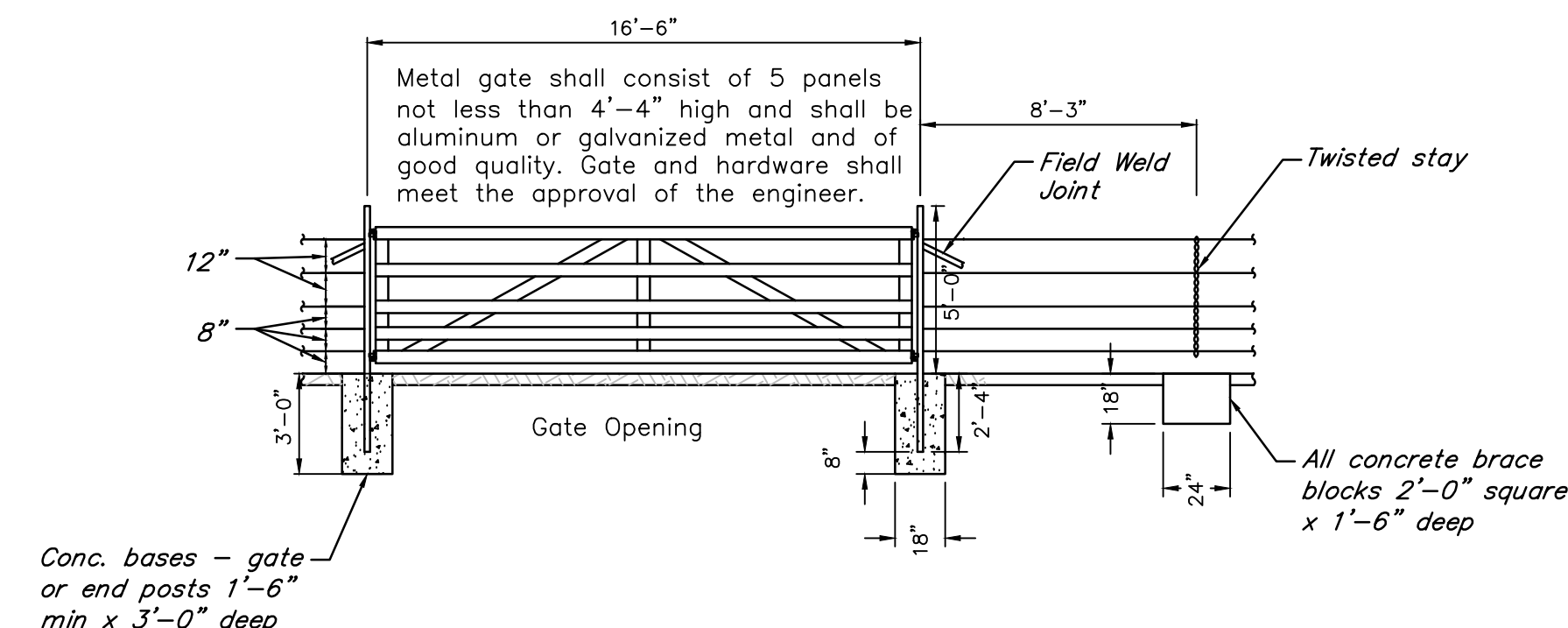


10/7/2024

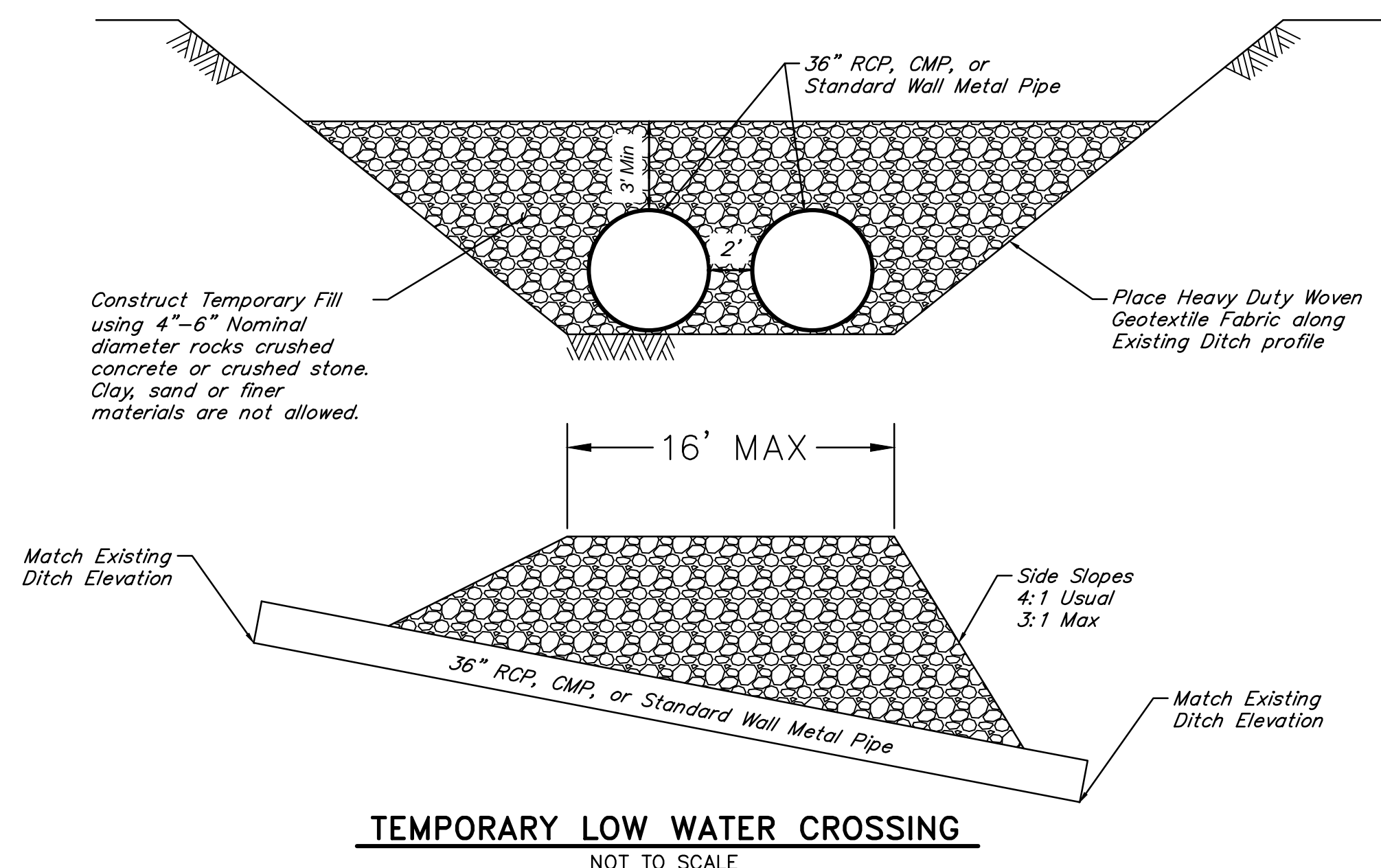
END OF ADDENDUM NO. 2



NOTES:
1. Rip-Rap shall be placed in accordance with Specification Section 02228-Rip Rap. Fill rip-rap voids and bury rip-rap a minimum of 6 inches of topsoil on side slope as directed by the Engineer.



NOTE 1
STA 3+79 - STA 4+11 Cement Stabilized Sand
STA 4+11 - STA 4+70 Select Fill
STA 4+70 - STA 6+26 Cement Stabilized Sand
STA 6+26 - STA 6+84 Select Fill
STA 6+84 - STA 6+99 Cement Stabilized Sand



NO.	DATE	REVISIONS	APP.
2	10/24	ADDENDUM 2	AMM
1	10/24	ADDENDUM 1	AMM

SABINE RIVER AUTHORITY
ORANGE COUNTY, TEXAS
GULF COAST CANAL-CLAYBAR SIPHON
MISCELLANEOUS DETAILS

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290
6330 West Loop South, Suite 150 • Bellaire, TX 77401 • 713.777.5337

SCALE: AS SHOWN DGN. BY: MAHMAD
DATE: AUGUST 2024 DWN. BY: SALVAREZ
JOB NO. 17314-0004-00 DWG. NO. _____
SUBMITTED: _____ SURV. BY: _____
F.B. NO. _____

ALAN M. MOON
123364
LICENSED PROFESSIONAL ENGINEER

9/11/2024

C14
SHEET NO. 16 OF 19

SECTION 02500
RAW WATER CONVEYANCE STEEL SIPHONS

PART 1 – GENERAL

1.1 SCOPE

This Item shall govern for furnishing and installing the steel pipes utilized for the construction of the freshwater supply pipe crossing a drainage way.

1.2 RELATED WORK

- A. Division 2, Site Work
1. Excavation, Trenching and Backfilling for Utilities
 2. Cement-Sand Backfill
 3. Concrete Structures
 4. Concrete Construction for Structures

1.3 MEASUREMENT AND PAYMENT

- A. Measurement of the Item, "Steel Pipe" will be measured per pipe by the linear foot unless otherwise noted on the plans or general notes.
- B. The work performed in accordance with this Item will be paid for at the unit price bid for "Steel Pipe" of the diameter specified. This price shall be full compensation for furnishing all labor, materials, equipment and incidentals required to complete the work as specified.
- C. No direct payment will be made for valves, fittings, thrust blocking, excavation, backfill, compaction and other miscellaneous work and materials necessary for proper construction of a water conveyance system. These are included in the contract prices of the various component parts.

1.4 QUALITY ASSURANCE

- A. Experience:
1. Pipe must be the product of one manufacturer with not less than five (5) years of successful experience manufacturing pipe of the type and size indicated. Pipe manufacturing operations (pipe, fittings, lining, and coating) must be performed at one location unless otherwise acceptable to the Engineer.
 2. Furnish an affidavit that the pipe, specials, fitting, and appurtenances furnished comply with all provisions of this Section and applicable ASTM and AWWA Standards.

1.5 SUBMITTALS

- A. Conform to requirements of Specification 01300 Submittals
- B. Manufacturer's product data sheets, shop drawings, specifications, and other data, showing complete details of the fabrication and construction of each size and type of pipe and fittings, together with complete data covering all materials proposed for use, including the following:

1. Pipe stiffness.
 2. Name of manufacturer.
 3. Pipe size, wall thickness, length, and dimensions.
 4. Cell classification.
 5. Laying lengths.
 6. Joint and gasket details with type and configuration sizes, dimensions, and gasket grooves.
 7. Jointing methods and tolerances.
 8. Minimum radii for horizontal deflection.
 9. Details of reinforcement.
 10. Details of lubrication and grouting ports.
 11. Details of fittings and specials.
 12. Fabrication tolerances for all pipe dimensions.
 13. Shop drawings shall be prepared, signed, and sealed by a Professional Engineer licensed in the State of Texas employed or retained by the Contractor.
- C. Pre-Construction submittal data and specifications shall include, but shall not be limited to, the following for each size and type of pipe:
1. Manufacturer and manufacturer's qualifications.
 2. Manufacturing Details. Description and specification of the manufacturer and methods of manufacture including reinforcing, casting, covering, and storage.
 3. Material Properties. Submit data in support of the materials used meet or exceed the specified properties for all materials used including, reinforcing, gaskets, and protective lining, if applicable.
 4. Detailed structural calculations for the pipe confirming the following:
 - a. Calculations shall show loading and other design criteria, design standards, formulas, assumptions, loads, methods of analysis intermediate steps, and results of stresses and displacements.
 - b. If computer calculations are performed, example calculations shall be furnished to show the procedures used by the software.
 - c. Calculations shall be submitted showing that pipe and joints can adequately resist anticipated installation loads, including handling and jacking loads, in-situ and service loads, and all other associated design loads with required factors of safety.

- d. Calculations shall be prepared, signed, and sealed by a Professional Engineer licensed in the State of Texas employed or retained by the Contractor.
 - 5. Pipeline layout and profile drawings showing the location, stationing, and invert elevations of pipe sections, fittings, and closure pieces, if applicable.
 - 6. Handling, storage details, and shop drawings of methods of transportation from the manufacturing location to the site and methods and equipment used to handle and store.
- D. Submit proof of certification for welders. Insurance certified procedures and position each welder is qualified to perform. Provide documentation of the most recent weld qualification test date and continuity of use in each process for which the welder or welding operator is required.
- E. Inspection procedures to be used by manufacturer for quality control and assurance for materials and welding. Submit at least 30 days prior to repair work, procedures detailing shop and field work to be performed. Repair defects such as substandard welds, excessive radial offsets (misalignment), pitting, gouges, cracks, etc.

1.6 DESIGN CRITERIA

- A. Pipe, joints, and gaskets shall be designed and furnished by the Contractor in accordance with the requirements of the standards listed herein except as modified or supplemented herein.
- B. Pipe Inside Diameter: Refer to the Drawings.
- C. Design Earth Cover Height Above the Top of the Pipe: Refer to the Drawings.
- D. In Situ Soil Characteristics and Water Table Elevation: Refer to the Geotechnical Engineering Report.
- E. Live Load: Equal to HS-20.
- F. Surcharge Load: As determined by the Contractor during construction.
- G. Groundwater Load: Refer to the Geotechnical Engineering Report.
- H. Intermittent Hydrostatic Pressure or Other Loads: Assume Maximum Water Surface Elevation of 29.00 feet AMSL with the pipe empty or pipe full of water.
- I. Minimum pipe stiffness when tested in accordance with ASTM D2412 shall be 72 psi (SN 72) for trenchless installation or 46 psi (SN 46) for open-cut installation.

PART 2 – PRODUCTS

2.1 STEEL SIPHON MATERIAL

- A. The pipes shall be of the size, strengths and dimensions shown on the plans and shall include all appurtenances and jointing materials as may be required to complete the work.

Provide the types and grades of steel listed in this Section unless otherwise shown on the plans.

Carbon Steel. Meet ASTM A36.

Low-Alloy Steel. Meet the requirements of one of the following standards:

- ASTM A252 Grade 2 or 3;
- ASTM A529 Grade 50;
- ASTM A572 Grade 50 or 55;
- ASTM A588;
- ASTM A709 Grade 50, 50S, 50W, or HPS 50W; or
- ASTM A992.

PART 3 – EXECUTION

3.1 FABRICATION

- A. All pipe of a given size, provided and utilized in this project, shall be of the same fabrication and acquired from a single supplier. Seamless pipe shall be utilized for all pipe having a nominal size equal to or less than 24” diameter. Larger pipe, utilized strictly for the construction of the siphon, may be seamless, spiral welded, or fabricated of rolled plate with longitudinal seams.
- B. If the siphon pipe is fabricated of rolled plate, thinning may not result in a loss of thickness exceeding 5% of the nominal design wall thickness. Any longitudinal seams shall be offset by 1/3 the circumference of the pipe at each successive circumferential weld.
- C. Joints: Full penetration butt welds shall be used for all joints and seems unless otherwise approved in writing by the Engineer. Field weld full penetration butt welded joints for steel pipe for entire circumference.
- D. Protective Coating: All pipe shall be delivered to the project construction site with finished interior and exterior coatings in accordance with Section 09920 Protective Coatings.

3.2 HANDLING AND STORAGE

- A. Pipe shall be handled in a manner to protect the pipe and coating system from damage during loading, unloading, and shipping. All pipe shall be equipped with internal braces to maintain roundness of $\pm 1\%$ during shipping and handling. Pipe shall be handled with nylon slings and spreader bars to protect pipe. Pipe shall be transported and stored on padded bunks or dunnage to protect the exterior surface. Prior to installation, the pipe shall not be stored directly on the ground surface or dragged, skidded, or rolled on the ground surface during handling.
- B. Pipe shall be inspected upon delivery to the site and pipe defects or damaged coating noted. All damaged areas shall be repaired or replaced per the applicable specifications at no additional charge to the Owner.
- C. Contractor shall avoid contact of pipe surface with heavy objects and avoid foot traffic on the pipe surfaces except as required for installation. Pipe surfaces shall be cleaned and prepared for coating repairs and field coating of field weld joints in accordance with the specification for Section 09920 Protective Coatings.

3.3 INSTALLATION

- A. Install pipe, fittings, specials, and appurtenances as specified. Install pipe, fittings, and specials in accordance with the manufacturer’s recommendations, and AWWA M11.

- B. For pipe to be installed by open cut methods, trenching, backfilling, and embedment for pipe shall also be in accordance with Section 02220 Excavation, Trenching and Backfilling.
- C. Pipe shall be installed to the lines and grades indicated.
- D. Each joint of pipe must be inspected immediately prior to being lowered into the excavation. If repair of damaged areas and holidays is permitted by Engineer, repair those areas per the pipe manufacturer’s recommendations before the pipe is lowered into the excavation.
- E. Install pipe as specified. Pipe installation methods will be subject to the acceptance of the Engineer. Pipe must be lowered into the excavation using textile slings. Chains or cables shall not be used for handling the pipe.
- F. Do not damage the gaskets or the ends of the pipe joints. Prior to connecting the joints, inspect and verify that the pipe ends, and gaskets are thoroughly clean with no foreign materials adhering to them. Coat the pipe ends or groove slopes of the pipe with a lubricating material in accordance with the manufacturer’s recommendations. Petroleum lubricants shall not be permitted. Assemble the pipe with sufficient force necessary to make a tight seal on the gasket. Extreme caution shall be taken by the Contractor so as not to damage the pipe. Do not exceed the forces recommended by the manufacturer for joining the pipe
- G. Installation below drainage ditch: Support pipe to distribute loads evenly on bedding material. Temporary timber supports may be utilized to support pipe for field welding. If pipe is supported on steel or concrete cribbing, place ½” thick rubber gasket/bearing pad between pipe and support to protect surface of pipe and prevent damage to the coating.

3.4 TESTING

- A. Conduct pipe testing as outlined below.
- B. Hydrostatic Leak Test-Gravity Flow Sewer Lines:
 - 1. Perform hydrostatic leak tests after installation.
 - 2. The length of the pipe to be tested shall be such that the head over the crown of the upstream end is not less than 2 feet or 2 feet above the ground water level whichever is higher.
 - 3. Plug the pipe with pneumatic bags or mechanical plugs so that the air can be released from the pipe while it is being filled with water.
 - 4. Continue the test for 1 hour and make provisions for measuring the amount of water required to maintain the water at a constant level during this period.
 - 5. Determine the maximum allowable leakage or infiltration by the following formula.

$$L = \frac{C \times D \times S}{126,720}$$

Where L is the allowable leakage in gallons per hour; S is the length of pipe tested in feet; D is the nominal diameter of the pipe in inches; C is infiltration/exfiltration rate. Use 50 for C outside of 25-year floodplain, and 10 for C within 25-year floodplain.

6. Determine the rates of infiltration by means of V-Notch weirs, pipe spigot, or plugs in the end of the pipe. Methods, times, and locations are subject to the Engineer's acceptance.
7. Pipe with visible leaks or infiltration or exceeds the maximum allowable leakage or infiltration is considered defective and must be corrected.

C. Alternative Air Test for Individual Joints:

1. An air test at each individual joint will be acceptable in lieu of the hydrostatic test referenced above.
2. Lines 36 inches and larger may be tested at individual joints.
3. Unless otherwise recommended by the manufacturer, the shortest allowable time for the test pressure to drop from 3.5 pounds per square inch (gauge pressure) to 2.5 pounds per square inch (gauge pressure) is 10 seconds for all pipe sizes.
4. Pipe joints that exceed the maximum allowable pressure drop over a specific period of time as recommended by the manufacturer or herein are considered defective and must be corrected by performing repairs as recommended by the pipe manufacturer.

D. Deflection Testing for Pipe:

1. Perform deflection tests on flexible and semi-rigid pipe in accordance TCEQ requirements.
 - a. The maximum allowable deflection of pipe measured as the reduction in vertical inside diameter is 75% of the manufacturer's recommendation.
 - b. Conduct test after the final backfill has been in place a minimum of 30 days.
 - c. Thoroughly clear the lines before testing.
2. Perform test by pulling a properly sized mandrel through the line up to 36-inch diameter. Larger than 36-inch which may be measured from the inside-vertical dimensions.
3. Repair pipe with deflections in excess of the maximum allowable deflection as recommended by the pipe manufacturer.

E. Engineer may require additional performance tests of the joints.

F. Contractor shall not enclose or cover any Work until inspected and required testing has been completed and accepted by the Engineer.

G. Weld Testing: Contractor shall perform liquid penetrant examination ("dye penetrant testing") per ASTM E165 or magnetic particle testing per ASTM E709 for 100 percent of all joints welded. Contractor shall provide all testing and observation equipment necessary during the acceptance tests. Contractor shall notify Owner and project inspector a minimum of 72 hours before beginning final testing for acceptance. All acceptance tests shall be witnessed by the Owner and/or the project inspector. All defects identified shall be gouged out and replaced at no additional expense to the Owner.

END OF SECTION