

SECTION 333113 – SANITARY UTILITY SEWERAGE PIPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, Agreement, including General Provisions of Contract, General and Supplementary Conditions and Division 01 General Requirements apply to the work of this Section.

1.02 SUMMARY

- A. This section includes sanitary sewer piping, and leach field to be installed at the pump house.

1.03 RELATED SECTIONS

- A. Division 31 Section “Site Clearing.”
- B. Division 31 Section “Earth Moving” for excavation and backfill.

1.04 PROJECT CONDITIONS

- A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.

1.05 BUY AMERICAN REQUIREMENTS

- A. Provide certificates to show that all products meet the following requirements.
 - 1. American Iron and Steel (AIS)
 - 2. Build America, Buy America Act
- B. See Supplementary Conditions for details.

1.06 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 specification sections.
- B. Product Data: Submit manufacturer's technical product data and installation instructions for sewage system materials and products, including but not limited to all piping, pipe joints, fittings, and leach field materials.

1.07 QUALITY ASSURANCE

- A. Environmental Agency Compliance: Comply with regulations pertaining to sanitary sewerage systems.
- B. Manufacturer's Qualifications: Firms regularly engaged in manufacture of sanitary sewage system's products of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 10 years.
- C. Compliance of Materials: All materials used on this project shall be new, unused and of current manufacture. Evidence of compliance with these specifications shall be furnished by the Contractor, before construction begins.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect pipe fittings and seals from dirt and damage.
- B. Handle manholes and other structures according to manufacturer's written rigging instructions.

PART 2 - PRODUCTS

2.01 SEWER MAIN PIPE AND PIPE FITTINGS

- A. Pipe and fittings shall conform to AWWA C901 and AWWA C906
- B. HDPE Pipe shall meet the following: Manufactured from PE4710 polyethylene compounds that meet or exceed ASTM D3350, cell classification of PE445574; Standard Dimension Ratio (SDR) of 17; all pipe shall have the same trade (brand) name and shall be certified by the manufacturer as compatible for fusion joining.
- C. HDPE Fittings: Provide fittings of at least the same pressure rating, manufactured from the same polyethylene compounds, and having the same ASTM D3350 cell classification as the adjoining pipe. Molded fittings and specials shall be used to the extent that they are available from the pipe manufacturer. When molded fittings are not available, factory -produced mitered fittings shall be used. Fabricate by using butt fusing or sidewall fusing per ASTM D2657. Construct fabricated bends 30 degrees and less with at least two segments. For 45-degree to 90-degree bends, provide at least three segments. For a 90-degree bend, provide at least five segments. Field-fabricated fittings are prohibited.
- D. Pipe Joints: Join HDPE pipe and fittings using butt-fusion and/or electrofusion couplings. Butt-fusion shall be in accordance with ASTM D3261. Electrofusion couplings shall comply with ASTM F1055.

2.02 LEACH FIELD PIPE AND FITTINGS

- A. HDPE Pipe and Fittings: SDR 17 meeting ASTM D3035. Fittings may be fused or bell and spigot.
- B. Perforated Pipe:
 - 1. 4-Inch PVC Leach Pipe Distribution Laterals and Fittings: ASTM D2665. Pipe shall be smooth-wall, bell and spigot ends. Leach pipe shall have two (2) 5/8-inch holes spaced at 120-degree intervals with no more than 5-inch spacing in between perforations.
- C. Monitor Tube/Cleanouts: 4-inch ABS meeting ASTM D2661, Schedule 40

PART 3 - EXECUTION

3.01 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.02 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewer piping. Location and arrangement of piping

- layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.
 - C. Install gravity-flow, nonpressure, drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow, at elevation and slope indicated on Drawings.

3.03 IDENTIFICATION

- A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tapes directly over piping and at outside edges of underground structures.

3.04 INSTALLATION, GENERAL

- A. Lay Piping: Beginning at low point of system, true to grades and alignment indicated.
 - 1. Placing Pipe: Contour compacted bedding to accept pipe barrel, provide depressed area to accept bell ends, "haunch" or hand tamp the bedding around the pipe to achieve good support.
 - 2. Cleaning Pipe: Clear interior of piping of dirt and other superfluous material as work progresses.
 - 3. Place plugs in ends of uncompleted conduit at end of day or whenever work stops. Secure plug such that it cannot be forced into the pipe.
 - 4. Final accuracy of all installed piping, except that installed in casing, shall be within 0.01 foot vertically and 0.05 foot horizontally of the exact location taken from the plans. In no case will a reverse or flat grade be allowed. Pipe which exceeds the above limits of variation shall be adjusted immediately and no further pipe shall be laid until so authorized by the Owner's Representative.

3.05 BACKFILLING

- A. Backfilling is specified in Division 31 Section "Earth Moving."

3.06 FIELD QUALITY CONTROL

- A. Hydrostatic Test:
 - 1. Test sanitary sewerage according to the following:
 - a. 6 feet above the upper end of the test section shall be maintained for a period of 4 hours, during which time it will be presumed that full absorption of the pipe body has taken place and thereafter for a further period of 1 hour for the actual test of leakage.

- b. During this 1-hour period, the measured loss shall not exceed the rate given in the following formula (which shall also apply to ground water infiltration):

$E = 0.002 \times D \times L$, where

E = allowable leakage in gallons per hour

D = nominal diameter of the pipe in inches

L = length of pipe being tested

2. Leaks and loss in test pressure constitute defects that must be repaired.
3. Replace leaking piping using new materials and repeat testing until leakage is within allowances specified.

3.07 CLEANING

- A. Clean dirt and superfluous material from interior of piping. Flush with potable water.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Leach Field will not be measured for payment. It is subsidiary to the Pump House.

4.02 BASIS OF PAYMENT

- A. Payment for Septic System, and Leach Field, items shall include furnishing all necessary personnel, equipment, transportation and supplies to perform the work as shown and specified.

END OF SECTION