SECTION 33 31 13

SITE SANITARY SEWERAGE GRAVITY PIPING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Sanitary sewerage drainage piping, fittings, and accessories.

B. Connection of building sanitary drainage system to municipal sewers.

C. Cleanout access.

1.03 DESCRIPTION OF WORK

A. Exterior sanitary sewer system work is shown on the drawings and includes all pipe, manholes, fittings and other items required to provide service from 5 feet outside of building to tie in with local utility lines, unless shown otherwise.

1.04 RELATED REQUIREMENTS

A. Section 31 23 16 - Excavation: Excavating of trenches.

B. Section 31 23 23 - Fill: Bedding and backfilling.

C. Section 33 05 61 - Concrete Manholes.

1.05 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.06 REFERENCE STANDARDS

A. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2021.

B. ASTM A746 - Standard Specification for Ductile Iron Gravity Sewer Pipe; 2018.

C. ASTM B43 - Standard Specification for Seamless Red Brass Pipe, Standard Sizes; 2020.

D. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2020a.

E. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2009.

F. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals; 1998 (Reapproved 2005).

G. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.

H. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.

I. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material; 2021.

J. ASTM F1417 - Standard Practice for Installation Acceptance of Plastic Non-pressure Sewer Lines Using Low-Pressure Air; 2011a.

K. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2017.

L. Little Rock Water Reclamamtion Authority Standards and Specifications, Latest Edition.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.08 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories.

C. Tests: Pressure test results of sewer lines.

D. Project Record Documents:
   1. Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.
   2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A. Provide products that comply with applicable code(s).

B. Cast Iron Soil Pipe: ASTM A74, service type, inside nominal diameter of 4 inches hub and spigot end.

C. Joint Seals for Cast Iron Pipe: ASTM C564 rubber gaskets.

D. Ductile Iron Pipe: ASTM A 746, Thicknes Class 50 or 51, with cement mortar lining, bell and spigot end.

E. Joint Seals for Ductile Iron Pipe: AWWA C111/A21.11; styrene butadiene rubber (SBR) or vulcanized SBR gaskets.

F. Lining for Ductile Iron Pipe: Ceramic epoxy coating equal to PROTECTO 401, by Induron.

G. PVC Pipe (for 4" pipe): ASTM D 3034 SDR 21 for 200 psig rating.
   1. Fittings: ASTM D 3034, PVC.
   2. Joints: ASTM D 3213 push-on gasket.

H. Plastic Pipe: ASTM D 3034, Type PSM, SDR26, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 6 inches, bell and spigot style gasketed joints.

I. Plastic Pipe: ASTM D 3034, Type PSM, SDR35, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 8 inches to 15 inches, bell and spigot style gasketed joints.

J. Plastic Pipe: ASTM D3350, SDR 11, High Density Polyethylene (HDPE) material; inside nominal diameter of 6 inches, with cell classification of 335434C or better, thermal butt fusion joints and fittings in accordance with manufacturer's recommendations; pipe and fittings same material utilizing transition fittings when connecting to existing piping.

K. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, and other configurations required.

B. Cleanouts: Cleanout ferrule with plug shall be equal to Wade #8550 E.

2.03 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: Granular fill as specified in Section 31 23 23 - Fill.

B. Pipe Cover Material: Structural fill under pavements,slabs-on-grade, and similar construction as specified in Section 31 23 23 - Fill.

C. Pipe Cover Material: General fill under lawns as specified in Section 31 23 23 - Fill.

PART 3 EXECUTION

3.01 GENERAL

A. Perform work in accordance with applicable code(s).

3.02 TRENCHING

A. Bottom Of Trenches: Remove and replace all unstable soil or rubble fill encountered at bottom of trench with thoroughly consolidated bedding material. Keep trench clear of water at all times. Allow 6 inches over-excavation for bedding under pipe.

B. Backfill around sides and to 6 inches over top of pipe with bedding for plastic pipes or cover fill for metallic pipe in 6" maximum lifts, tamp fill under pipe haunches and compact, then complete backfilling.

3.03 INSTALLATION - PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
   1. Plastic Pipe: Also comply with ASTM D2321.

C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

D. Connect to building sanitary sewer outlet and municipal sewer system .

3.04 INSTALLATION - CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for cast iron riser.

C. Establish elevations and pipe inverts for inlets and outlets as indicated.

D. Mount cleanout fellule in bell end of cast iron soil pipe riser level at finished grade. Install 4" cleanouts on 4" piping and 6" cleanouts on 6" and larger piping.

E. Secure cleanout top with a 2' diameter x 6" thick concrete pad at grade in lawn areas

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 40 00.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

C. Pressure Test: Test in accordance with ASTM F1417.

D. Deflection Test: After the sewer line has been laid and backfilled, the Contractor shall pull a mandrell through the line without a mechanical pulling device. The maximum deflection allowable shall not exceed 5 percent of the internal pipe diameter.

3.06 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

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