SECTION 333000 – SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work Included:

1. Sanitary sewerage drainage piping, fittings, accessories and bedding.
2. Connection of building sanitary sewerage system to municipal sewers.
3. Manholes, Cleanouts.

B. Related Sections include:

1. Section 310000 – Earthwork
2. Section 312319 – Dewatering
3. Section 315000 – Excavation

1.3 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.

B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12" Drop.

C. ASTM C700 – Vitrified clay pipe, extra strength, standard strength and perforated.

D. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18" Drop.

E. ANSI/ASTM D2321 - Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

F. ANSI/ASTM D3034 - Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, SDR 35 O-ring joint.

G. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

H. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

1.4 DEFINITIONS

A. Bedding: Aggregate fill placed under and beside pipe, prior to subsequent backfill operations.

1.5 SUBMITTALS

A. Product Data: Provide data indicating pipe, pipe accessories; manholes, cleanouts, frames and lids, steps.

B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.6 PROJECT RECORD DOCUMENTS

A. Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.7 REGULATORY REQUIREMENTS

A. Conform to all applicable code for materials and installation of the Work of this section.

1.8 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated.

1.9 COORDINATION

A. Coordinate the Work with termination of sanitary sewer termination point outside building, connection to municipal sewer utility service, and trenching.

PART 2 - PRODUCTS

2.1 SEWER PIPE MATERIALS

A. Plastic Pipe: ANSI/ASTM D3034, Type PSM, Polyvinyl Chloride (PVC) material; inside nominal diameter as indicated, bell and spigot style, O-ring joint end.

2.2 PIPE ACCESSORIES

A. Pipe Joints: Mechanical clamp ring type, stainless steel expanding and contracting sleeve, neoprene ribbed gasket for positive seal.

B. 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.

C. Underground-Type Plastic Line Marker: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide green tape with black printing reading "CAUTION SEWER LINE BURIED BELOW".

2.3 BEDDING MATERIALS

A. Bedding shall conform to ODOT CMS Class B; backfill material shall conform to 310000.

2.4 SANITARY SEWER MANHOLES

A. General: Provide precast reinforced concrete sanitary manholes as indicated, and complying with ASTM C 478.

B. Top: Precast concrete, of concentric cone, eccentric cone, or flat slab top type, as indicated.

C. Base: Precast concrete, with base riser section and separate base slab, or base riser section with integral floor, as indicated.

D. Steps: Ductile-iron or aluminum, integrally cast into manhole sidewalls.

E. Frame and Cover: Ductile-iron, heavy-duty, indented top design, with lettering cast into top reading "SANITARY SEWER", size and type as shown on drawings.

F. Pipe Connectors: Resilient, complying with ASTM C 923.

2.5 CLEANOUTS

A. General: Provide as indicated, pipe extension to grade with ferrule and countersunk cleanout plug. Provide round cast-iron access frame over cleanout, with heavy-duty secured scoriated cover with lifting device.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.

B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 310000 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material at trench bottom, level materials in continuous layer not exceeding 8" compacted depth, compacted in accordance with section 310000.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION – PIPE

A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Seal joints watertight.

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

C. Install bedding at sides and over top of pipe to minimum compacted thickness of 12"; compacted in accordance with section 310000.

D. Refer to Section 310000 for trenching requirements. Do not displace or damage pipe when compacting.

E. Connect sanitary sewer outlet to municipal sewer system.

F. Install trace wire continuous over top of pipe. Coordinate with Section 312000.

3.5 INSTALLATION – MANHOLES

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

B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

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

D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

E. Place precast concrete sections as indicated. Where manholes occur in pavements, set tops of frames and covers flush with finish surface. Elsewhere, set tops 3" above finish surface, unless otherwise indicated.

F. Install in accordance with ASTM C 891.

G. Provide rubber joint gasket complying with ASTM C 443 at joints of sections.

3.6 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 1.

B. Request inspection prior to and immediately after placing bedding.

C. Compaction testing will be performed in accordance with ANSI/ASTM D698.

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

E. Pressure Test: Test in accordance with requirements of local authority.

F. Infiltration Test: Test in accordance with requirements of local authority.

G. Deflection Test: Test in accordance with requirements of local authority.

3.7 PROTECTION

A. Protect finished installation under provisions of Division 1.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 33 30 00

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