SECTION 02530

SANITARY SEWERAGE

PART 1 - GENERAL

1.1 SUMMARY

A. **Section Includes:** Sanitary sewerage system piping and appurtenances from a point 5 feet outside the building to an existing sanitary sewerage manhole located at the utility servitude along the property line on the northern side of the site.

B. **Related Sections**:

1. Section 02200 - Earthwork: Excavation and backfill required for sanitary sewerage system piping and structures.
2. Section 03300 - Cast-In-Place Concrete: Cast-in-place concrete manholes.
3. Division 15:
   a. Sanitary drainage and vent systems for building sanitary drains.
   b. Drainage and vent systems for building sanitary drains.

1.2 SUBMITTALS

A. **General**: Submit the following in accordance with Section 01300.

B. **Product data** for drainage piping specialties.

C. **Shop drawings** for cast-in-place concrete sanitary sewer cleanouts, including frames and covers.

D. **Coordination** drawings showing pipe sizes and existing manholes, cleanouts, locations, and elevations. Include details of underground structures and connections. Show other piping in the same trench and clearances from sanitary sewerage system piping. Indicate interface and spatial relationship between piping and proximate structures. Show all conflicts and submit shop drawings of any conflict structures or offsets.

1.3 QUALITY ASSURANCE

A. **Environmental Compliance**: Comply with applicable portions of local environmental agency regulations pertaining to sanitary sewerage systems.

B. **Utility Compliance**: Comply with Sewerage and Water Board of New Orleans regulations and standards pertaining to sanitary sewerage systems.

1.4 PROJECT CONDITIONS

A. **Site Information**: Perform site survey, research public utility records, and verify existing utility locations. Verify that storm sewerage system piping may be installed in compliance with original design and referenced standards.

1. Locate existing sanitary sewerage system piping and structures to tie into.

1.5 SEQUENCING AND SCHEDULING

A. **Coordinate** connection to public sewer with Sewerage and Water Board of New Orleans.

B. **Coordinate** with interior building sanitary drainage piping.

C. **Coordinate** with other utility work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **Available Manufacturers**: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include but are not limited to the following:

B. **Manufacturers**: Subject to compliance with requirements, provide products by one of the following:

1. Cleanouts:
   a. Ancon, Inc.
   b. Josam Co.
   c. Smith (Jay R.) Mfg. Co.
   d. Wade Div.; Tyler Pipe.
   e. Zurn Industries, Inc.; Hydromechanics Div.
2. Underground Warning Tapes:
   a. Allen Systems, Inc.; Reef Industries, Inc.
   b. Brady (W.H.) Co.; Signmark Div.
   c. Calpico, Inc.
   d. Carlton Industries, Inc.
   e. EMED Co., Inc.
   f. Seton Name Plate Co.

2.2 PIPE AND FITTINGS

A. **General**: Provide pipe and pipe fitting materials compatible with each other. Where more than one type of materials or products is indicated, selection is Installer's option.

B. **PVC (Polyvinyl Chloride) Sewer Pipe and Fittings (Gravity)**: Solid wall, AWWA C900, DR 18, for elastomeric gasket joints.

1. Gaskets: ASTM F 477, elastomeric seal.

C. **Couplings**: Elastomeric compression gasket, made to match pipe inside diameter or hub, and adjoining pipe outside diameter.

1. Gaskets: ASTM F 477, elastomeric seal for plastic pipe. Gaskets for dissimilar or other pipe materials shall be compatible with pipe materials being joined.

2.3 STANDARD SEWER CLEANOUTS

A. **Cleanout Frames and Covers**: ASTM A 536-80, Grade 65-45-12, heavy-duty, ductile iron, 8-inch inside diameter by 7- to 9-inch riser, and 5 ½-inch-diameter cover, indented top design, with lettering "SANITARY SEWER CLEANOUT" cast into cover.

2.4 MANHOLES

A. **Brick Manholes:** Brick and mortar, of depth indicated, complying with Sewerage and Water Board of New Orleans Standard Drawings.
1. Base, Channel, and Bench: Concrete.
2. Wall: ASTM C 32, Grade MS, manhole brick; 8-inch minimum thickness, 48-inch diameter, with tapered top for a 24-inch frame and cover. Thickness of section of wall deeper than 8 feet shall be 12 inches minimum.
3. Mortar and Parging: ASTM C 270, Type S, using ASTM C 150, Type II Portland cement.

B. **Cast-In-Place Manholes:** Reinforced concrete of dimensions and with appurtenances indicated.
1. Bottom, Walls, and Top: Reinforced concrete.
2. Channel and Bench: Concrete.
3. Steps: Cast into sidewall at 12-inch intervals.

C. **Manhole Steps:** Wide enough for an adult to place both feet on one step and designed to prevent lateral slippage off the step.
1. Material: 34 wrought iron.
2. Material: Steel-reinforced plastic.

D. **Manhole Frames and Covers:** ASTM A48-83, Class 30, heavy-duty, cast iron, 24-inch inside diameter by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch-diameter cover, indented top design, with lettering “SEWER” cast into cover.

E. **Precast Concrete Manholes:** ASTM C 478 or ASTM C 858, 5,000 psi (28 day) precast reinforced concrete, of depth indicated. Sections shall have provision for rubber gasket joints. Base section slab shall have minimum thickness of 6 inches, riser sections shall have minimum thickness of 4 inches and be 48 inches inside diameter, and top section and grade rings shall match 24-inch frame and grate, unless otherwise indicated.
1. Base Section: Base riser section and separate base slab, or base riser section with integral floor.
2. Riser Sections: Sections shall be of lengths to provide depth indicated.
3. Top Section: Flat slab type with opening to match grade rings.
4. Grade Rings: Provide 2 or 3 reinforced concrete rings, of 6 to 9 inches total thickness.
5. Gaskets: ASTM C 443, rubber.
6. Steps: Cast into riser sidewall at 12- to 16-inch intervals.
7. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.
8. Channel and Bench: Concrete.

2.5 CONCRETE AND REINFORCEMENT

A. **Concrete:** Portland cement mix, 4,000 psi, unless indicated otherwise.
1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.

3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Reinforcement: Steel conforming to the following:
1. ASTM A 615 Grade 60

2.6 IDENTIFICATION

A. Plastic Underground Warning Tapes: Polyethylene plastic tape, 6 inches wide by 4 mils thick, solid green in color with continuously printed caption in black letters "CAUTION - SANITARY SEWER LINE BURIED BELOW."

PART 3 - EXECUTION

3.1 PREPARATION OF FOUNDATION FOR BURIED SANITARY SEWERAGE SYSTEMS

A. Grade trench bottom to provide a smooth, firm, stable, and rock-free foundation, throughout the length of the pipe.

B. Remove unstable, soft, and unsuitable materials at the surface upon which pipes are to be laid, and backfill with clean river sand to indicated level.

C. Shape bottom of trench to fit bottom of pipe. Fill unevenness with tamped sand backfill. Dig bell holes at each pipe joint to relieve the bells of all loads and to ensure continuous bearing of the pipe barrel on the foundation.

3.2 PIPE APPLICATIONS FOR UNDERGROUND SANITARY SEWERS

A. Solvent welded.

3.3 INSTALLATION, GENERAL

A. General Locations and Arrangements: Drawings (plans and details) indicate the general location and arrangement of the underground sanitary sewerage system piping. Location and arrangement of piping layout take into account many design considerations. Install the piping as indicated, to the extent practical.

B. Install piping beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's recommendations for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line and pull past each joint as it is completed.

C. Use proper size increasers, reducers, and couplings, where different size or material of pipes and fittings are connected. Reduction of the size of piping in the direction of flow is prohibited.

D. Install piping pitched down in direction of flow, at minimum slope of 0.33 percent, except where indicated otherwise.

E. Extend sanitary sewerage system piping to connect to building sanitary drains, of sizes and in locations indicated.

3.4 PIPE JOINT CONSTRUCTION AND INSTALLATION ON PUBLIC RIGHT-OF-WAY

A. Join and install PVC pipe as follows:
1. Pipe and gasketed fittings, joining with elastomeric seals in accordance with ASTM D 3212.
2. Installation in accordance with ASTM D 2321.

B. Join different types of pipe with standard manufactured couplings and fittings intended for that purpose.

3.5 MANHOLES

A. General: Install manholes complete with accessories as indicated. Form continuous concrete or split pipe section channel and benches between inlets and outlet. Set tops of frames and covers flush with finish surface where manholes occur in pavements. Elsewhere, set tops 3 inches above finish surface, unless otherwise indicated.

B. Construct cast-in-place or precast concrete manholes as indicated.

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

D. Apply bituminous mastic coating at joints of sections.

3.6 CLEANOUTS

A. Install cleanouts and extension from sewer pipe to cleanout at grade as indicated. Set cleanout frame and cover in concrete block 18 by 18 by 12 inches deep, except where location is in concrete paving. Set top of cleanout 1 inch above surrounding earth grade or flush with grade when installed in paving.

3.7 TAP CONNECTIONS

A. Make connections to existing piping and underground structures so that finished work will conform as nearly as practicable to the requirements specified for new work.

B. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe, install wye fitting into existing piping.

C. Make branch connections from side into existing 8-inch piping by removing section of existing pipe and installing wye fitting, into existing piping.

D. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris, concrete, or other extraneous material that may accumulate.

3.8 INSTALLATION OF IDENTIFICATION

A. Install continuous plastic underground warning tape during back-filling of trench for underground water service piping. Locate 6 to 8 inches below finished grade, directly over piping.

3.9 FIELD QUALITY CONTROL

A. Testing: Perform testing of completed piping in accordance with local authorities having jurisdiction.

B. **Cleaning**: Clear interior of piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed.

1. In large, accessible piping, brushes and brooms may be used for cleaning.
2. Place plugs in ends of uncompleted pipe at end of day or whenever work stops.
3. Flush piping between manholes, if required by local authority, to remove collected debris.

C. **Interior Inspection**: Inspect piping to determine whether line displacement or other damage has occurred.

1. Make inspections after pipe between manholes and manhole locations has been installed and approximately 2 feet of backfill is in place, and again at completion of project.
2. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects correct such defects, and re-inspect.

END OF SECTION