

SECTION 33 30 00
SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Work of this Section includes Work outside, underground sanitary sewer system, complete, ready for operation, including gravity flow lines, cleanouts, frames, covers, service lines, and all other incidentals.

1.2 RELATED WORK

- A. Maintenance of Existing Utilities: Section 01 00 00, GENERAL REQUIREMENTS.
- B. Excavation, Trench Widths, Pipe Bedding, Backfill, Shoring, Sheeting, Bracing: Section 31 20 00, EARTH MOVING.
- C. Section 03 30 00, CAST-IN-PLACE CONCRETE.
- D. Sodding, Topsoil: SECTION 32 90 00 PLANTING

1.3 QUALITY ASSURANCE

- A. Products Criteria:
1. Multiple Units: When two or more units of the same type or class of materials or equipment are required, these units shall be products of one manufacturer.
 2. Nameplates: Nameplate bearing manufacturer's name, or identifiable trademark, including model number, securely affixed in a conspicuous place on equipment, or name or trademark, including model number cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.
- B. Comply with the rules and regulations of the State Department of Health regarding on-site sewerage systems.

1.4 SUBMITTALS

- A. Manufacturers' Literature and Data: Submit the following as one package:
1. Pipe, Fittings, and, Appurtenances.
 2. Jointing Material.
 3. Frames and Covers.

1.5 PRODUCT SUBSTITUTIONS

- A. Products where specifically referenced by name, are indicated to establish project performance levels. Follow requirements specified in Division 1 - General Requirements.

- B. Additional costs resulting from substitution of products other than those specified, by model number, including drawing changes and construction, will be at the sole expense of the Contractor.
- C. Substitution Approval: Prior to delivery or installation, submittals for each equipment item shall be provided in accordance with Division I General Requirements. Acceptance will be based on the technical requirements herein as determined by COTR.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Use the latest edition of the referenced publication.
- B. American Society for Testing and Materials (ASTM):
 - D2412.....Determination of External Loading
Characteristics of Plastic Pipe by Parallel-
Plate Loading
 - D3034.....Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe
and Fittings
 - D3212.....Joints for Drain and Sewer Plastic Pipes Using
Flexible Elastomeric Seals
 - D4491.....Permittivity
 - F477.....Elastomeric Seals (Gaskets) for Joining Plastic
Pipe
 - F679.....Poly (vinyl chloride) (PVC) Large-Diameter
Plastic Gravity Sewer Pipe and Fittings
- C. Uni-Bell PVC Pipe Association:
 - Uni-B-6.....Recommended Practice Low Pressure Air Testing
of Installed Sewer Pipe
- D. Uniform Plumbing Code (UPC)
- E. International Association of Plumbing and Mechanical Officials (IAPMO)

PART 2 - PRODUCTS

2.1 PIPING (GRAVITY SEWER)

- A. Gravity Flow Lines (Pipe and Fittings):
 - 1. Polyvinyl Chloride (PVC):
 - a. Pipe and Fittings, 4 to 15 inches in diameter, shall conform to ASTM D3034, Type PSM, SDR 35. Pipe and fittings shall have elastomeric gasket joints providing a watertight seal when tested

in accordance with ASTM D3212. Gaskets shall conform to ASTM F477. Solvent welded joints shall not be permitted.

- 1) Solid wall pipe and fittings shall conform to ASTM F679, SDR 35 pipe and fittings shall gaskets conforming to ASTM F477, and shall be able to withstand a hydrostatic pressure of 50 psi.

2.2 CLEANOUTS, FRAMES AND COVERS

- A. Plastic Pipe (PVC) ASTM D 2729, SDR 35, nominal inside diameter of 4 inch or 6 inch as indicated on Drawings, threaded cleanout adapter and cleanout plug.
- B. Frames and covers:
 1. In landscaped areas: use Christy F8 box or equal with F8D reinforced concrete lid marked "SEWER". Perimeter Cap and Lid iron.
 2. In concrete or paved areas: use Christy G5 traffic box or equal with G5C traffic rated cast iron lid marked "SEWER". Box to have cast iron perimeter ring cap and lid seat.

2.3 ACCESSORIES

- A. Warning Tape: Standard, 4Mil polyethylene 4 inch wide tape detectable type, green with black letters and imprinted with "CAUTION BURIED SEWER LINE BELOW".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that building sanitary sewer connection, size, location and invert are as indicated.

3.2 PREPARATION

- A. Layout proposed locations of components and obtain Contracting Officer's Technical Representative's approval prior to installation.
- B. Ream pipe ends and remove burrs.
- C. Remove scale and dirt from components before assembly.
- D. Establish invert elevations for all components in the system.

3.3 PIPE SEPARATION

- A. Horizontal Separation - Water Mains and Sewers:
 1. Existing and proposed water mains shall be at least 10 feet horizontally from any proposed sanitary sewer or sewer service connection.
 2. Sewer mains may be located closer than 10 feet but not closer than 6 feet to a water main when:
 - a. Local conditions prevent a lateral separation of ten feet; and

- b. The water main invert is at least 18 inches above the crown of the sewer main; and
 - c. The water main is in a separate trench separated by undisturbed earth.
- B. Vertical Separation - Water Mains and Sewers at Crossings:
- 1. Water mains shall be separated from sewer mains so that the invert of the water main is a minimum of 24 inches above the crown of the sewer. The vertical separation shall be maintained within 10 feet horizontally of the sewer and water crossing. When these vertical separations are met, no additional protection is required.
 - 2. The required vertical separation between the sewer and the water main shall extend on each side of the crossing until the perpendicular distance from the water main to the sewer line is at least 10 feet.

3.4 GENERAL PIPING INSTALLATION

- A. Lay pipes true to line and grade. Gravity flow sewer shall be laid with bells facing upgrade.
- B. Do not lay pipe on unstable material, in wet trench or when trench and weather conditions are unsuitable for the Work.
- C. Connect between building sanitary piping with PVC pipe and fittings. Provide necessary fittings to connect to building sewer outlet. Provide cleanouts where indicated.
- D. Slope piping between building and sanitary sewer a minimum of 1/4-inch per foot unless otherwise indicated on Drawings.
- E. Support pipe on compacted bedding material. Excavate bell holes only large enough to properly make the joint.
- F. Inspect pipes and fittings, for defects before installation. Defective materials shall be plainly marked and removed from the site. Cut pipe shall have smooth regular ends at right angles to axis of pipe.
- G. Clean interior of all pipe thoroughly before installation. When Work is not in progress, open ends of pipe shall be closed securely to prevent entrance of storm water, dirt or other substances.
- H. Lower pipe into trench carefully and bring to proper line, grade, and joint. After jointing, interior of each pipe shall be thoroughly wiped or swabbed to remove any dirt, trash or excess jointing materials.
- I. Do not lay sewer pipe in same trench with another pipe or other utility. Sanitary sewers shall cross at least 2 feet below water lines.

- J. Do not walk on pipe in trenches until covered by layers of bedding or backfill material to a depth of 12 inches over the crown of the pipe.
- K. Warning tape shall be continuously placed 12 inches above sewer pipe
- L. Install gravity sewer line in accordance with the provisions of these specifications and the following standards:
 - 1. Polyvinyl Chloride (PVC) Piping: ASTM D2321.

3.5 CLEANOUTS

- A. 6 inches in diameter and consisting of a ductile iron 45 degree fitting on end of run, or combination Y fitting and 1/8 bend in the run with ductile iron pipe extension, water tight plug or cap and cast frame and cover flush with finished grade. Center-set cleanouts, located in unpaved areas, in a 12 by 12 by 6 inches) thick concrete slab set flush with adjacent finished grade.
- B. The top of the cleanout assembly shall be 2 inches below the bottom of the cover to prevent loads being transferred from the frame and cover to the piping.

3.6 INSPECTION OF SEWERS

- A. Inspect and obtain the COTR's approval. Thoroughly flush out before inspection. Lamp test between structures and show full bore indicating sewer is true to line and grade. Lip at joints on the inside of gravity sewer lines are not acceptable.

3.7 PROTECTION OF WORK

- A. Minimize vehicular traffic over drainage field during site preparations.

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DAYTON NATIONAL CEMETERY
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