

SUGGESTED SPECIFICATION PVC - SANITARY SEWER PIPE

POLYVINYL CHLORIDE (PVC) SANITARY SEWER PIPE AND FITTINGS

SCOPE: This specification covers the furnishing of PVC sanitary sewer pipe in nominal diameters 3 inches through 60 inches for use in sanitary sewer projects as designated on project drawings.

PIPE AND FITTINGS: All PVC sewer pipe and fittings shall be manufactured in accordance with one of the following Standard Specifications:

- a. ASTM D3034, “Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings”
- b. ASTM F679, “Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings”
- c. ASTM F794, “Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter”
- d. ASTM F949, “Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings”
- e. ASTM F1336, “Standard Specification for Poly(Vinyl Chloride) (PVC) Gasketed Sewer Fittings”
- f. ASTM F1760, “Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Non-Pressure Plastic Pipe Having Reprocessed-Recycled Content”
- g. ASTM F1803, “Standard Specification for Poly (Vinyl Chloride) (PVC) Closed Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter”

All fittings shall be compatible with the pipe to which they are attached.

JOINTS: All PVC pipe joints shall be gasketed, bell-and-spigot, push-on type conforming to ASTM D3212, “Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.” Since each pipe manufacturer has a different design for push-on joints, gaskets shall be part of a complete pipe section and purchased as such. Gaskets may be factory installed or field installed as recommended by the pipe manufacturer. Lubricant shall be as recommended by the pipe manufacturer.

PIPE STIFFNESS: All PVC sewer pipe shall have a minimum pipe stiffness that equals or exceeds 46 lbs / in-in.

ACCEPTANCE: Pipe or fittings may be rejected for failure to comply with any requirement of this specification.

POLYVINYL CHLORIDE (PVC) SANITARY SEWER PIPE DESIGN AND INSTALLATION

INSTALLATION: Pipe and fittings should be installed in accordance with ASTM D2321, "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications."

EMBEDMENT REQUIREMENTS: The method for calculating loads and determining embedment requirements for PVC sewer pipe shall be in accordance with the latest published edition of one of the following:

- a. ASCE Manual No. 60 / WPCF Manual FD-5, "Gravity Sanitary Sewer Pipe Design and Construction."
- b. The Handbook of PVC Pipe, Design and Installation available from the Uni-Bell PVC Pipe Association.
- c. UNI-TR-1, "Deflection: The Pipe/Soil Mechanism" available from the Uni-Bell PVC Pipe Association.

POLYVINYL CHLORIDE (PVC) SANITARY SEWER PIPE POST-INSTALLATION PERFORMANCE TEST REQUIREMENTS

LEAKAGE: All sewers shall be tested for excessive leakage. This may include appropriate water or low pressure air testing. The leakage outward or inward (exfiltration or infiltration) shall not exceed 25 gallons per inch of pipe diameter per mile per day for any section of the system. An exfiltration or infiltration test shall be performed with a minimum positive head of 2 feet. The air test, if used, shall be conducted in accordance with one of the following Standards:

- a. ASTM F1417, "Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air."
- b. UNI-B-6, "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe." Published by the Uni-Bell PVC Pipe Association.

The testing method selected shall properly consider the existing groundwater elevations during the test. If the test section fails the test for excessive leakage, the contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the governing authority.

DEFLECTION: After completion of the backfill, the Engineer may require that a deflection test be performed. If the test section fails the test for excessive deflection, the contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the governing

authority. Deflection tests should be conducted using a go/no-go mandrel. The mandrel's outside dimension shall be sized to permit no more than 7.5 percent deflection. The percent deflection shall be established from the base inside diameter of the pipe. The mandrel shall be approved by the Engineer prior to use. Lines that permit safe entry may allow other deflection test options, such as direct measurements with extension rulers.