

STANDARD SPECIFICATIONS

SECTION 02715

PVC GRAVITY SEWER PIPE

PART 1 - GENERAL

A. Description

This section includes materials, testing, and installation of polyvinyl chloride (PVC) gravity sewer pipe and fittings.

B. Related Work Specified Elsewhere

- | | | |
|----|--|-------|
| 1. | Trenching, Backfilling and Compacting | 02223 |
| 2. | Jacked Casing: | 02315 |
| 3. | Installation of Gravity Sewer Pipelines: | 02701 |
| 4. | Concrete: | 03300 |
| 5. | Precast Concrete Manholes and Manhole Bases: | 03461 |
| 6. | PVC Distribution Pipe: | 15064 |

C. Submittals

1. Provide materials list showing material of pipe and fittings with ASTM references and grade.
2. Provide certificates of compliance with all standards referenced in this section.

D. Application

PVC SDR 35 shall be used for gravity sewer mains up to and including 12-inch in diameter, except as specifically called out on the project plans.

E. Sewer Force Mains

PVC sewer force mains shall be constructed in accordance with the requirements for PVC Distribution Pipe, Section 15064.

F. Inverted Siphons

Inverted siphons will be permitted only at those locations approved by the District.

PART 2 - MATERIALS**A. Pipe and Fittings**

1. ASTM Requirements: Pipe, fittings, couplings, and joints shall be in conformance with the size, material and performance requirements of ASTM D 3034, SDR 35, and shall have gasketed joints. Pipe shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13364-B as defined in ASTM D 1784. Fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13343-C. All pipe shall be of solid wall construction with smooth interior and exterior surfaces.
2. Manufacturer's Testing Certification: During production of the pipe, the manufacturer shall perform the specified tests for each pipe marking. A certification by the manufacturer indicating compliance with specification requirements shall be delivered with the pipe. The certification shall include the test result data.
3. Pipe Marking: All pipe, fittings, and couplings shall be clearly marked at an interval not to exceed 5-feet as follows:
 - a. Nominal pipe diameter
 - b. PVC cell classification
 - c. Company, plant, shift, ASTM, SDR, and date designation
 - d. Service designation or legend

For fittings and couplings, the SDR designation is not required. All pipe shall have a home mark on the spigot end to indicate proper penetration when the joint is made.
4. Additional Pipe Tests Following Delivery: When pipe is delivered to the jobsite, the District representative may require additional testing to determine conformance with the requirements of pipe flattening, impact resistance, pipe stiffness, and extrusion quality. When testing is required, one test pipe shall be selected at random by the Director of Engineering from each 1,200 feet or fraction thereof of each size of pipe delivered to the jobsite but not less than one test pipe per lot. A lot shall be defined as pipe having the same identification marking. The length of specimen for each selected pipe shall be a minimum of 8-feet.
5. Pipe Retest: Pipe which is not installed within 120 days of the latest test shall not be used without prior approval of the District representative.
6. Fitting and Coupling End Configurations: The socket and spigot configurations for fittings and couplings shall be compatible with those used for the pipe.
7. Manufacturers: Pipe shall be as manufactured by Vinyltech, Diamond Plastics, Carlon, or approved equal. Fittings shall be as manufactured by GPK Products, or approved equal.

B. Gaskets for PVC Pipe

1. General: Unless otherwise specified, gaskets shall be manufactured from a synthetic elastomer, and shall be extruded or molded and cured in such a manner as to be dense, homogeneous and of smooth surface, free of pitting, blisters, porosity, and other

imperfections. The compound shall contain not less than 50 percent by volume of first-grade synthetic rubber. The remainder of the compound shall consist of pulverized fillers free of rubber substitutes, reclaimed rubber, and deleterious substances. The tolerance for any diameter measured at any cross section shall be $\pm 1/32$ -inch (.8mm).

2. Gasket Material Requirements: When required by the District representative, the contractor shall furnish test samples of gaskets from each batch used in the work. Gasket material shall meet the following requirements:

Property	Value	ASTM Test Method
Tensile Strength (min. psi)	2,000	D 412
Elongation at break (% min.)	350	D 412
Shore durometer, Type A (Pipe manufacturer shall select value suitable for type of joint)	40 to 65*	D 2240
Compression set (constant deflection) max % of original deflection	16	D 395
Compression strength after oven aging (96 hours, 158°F {70°C}) % of tensile strength before aging	80	D 573
Increase in Shore durometer hardness after oven aging. Maximum increase over original Shore durometer	10	D 2240
Physical requirements after exposure to ozone concentration (150 pphm. 70 hours, 140°F {40°C}), 20% strain)	No Cracks	D 1149

*This applies only to the sealing component of the gasket.

3. Splices: No more than one splice will be permitted in a gasket. A splice shall be made by applying a suitable cement to the ends and vulcanizing the splice in a full mold. The splice shall show no separation when subjected to the following tests:
4. Elongation Test: The part of the gasket which includes the splice shall withstand 100% elongation with no visible separation of the splice. While in the stretched position, the gasket shall be rotated in the spliced area minimum of 180 degrees in each direction in order to inspect for separation.
5. Bend Test: The portion of the unstretched gasket containing the splice shall be wrapped a minimum of 180 degrees and a maximum of 270 degrees around a rod of a diameter equal to the cross section diameter of the gasket.

PART 3 - EXECUTION

A. Related Installation Specification

PVC gravity sewer pipe shall be installed in accordance with the requirements of Section 02701, Installation of Gravity Sewer Pipelines.

END OF SECTION