

SECTION 02631 – POLYVINYL CHLORIDE (PVC) PRESSURE PIPE FOR STORMWATER AND WASTEWATER

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers the furnishing and installation of buried polyvinyl chloride (PVC) pressure pipe for stormwater, domestic, municipal and industrial sewage. PVC pressure pipe shall be furnished complete with all jointing materials and all other necessary appurtenances. PVC is an alternative piping material for all sewer piping shown on the drawings. See also Section 01016 – Water Mains Near Sewers for installation requirements when constructing sewers near potable water lines. All pipeline materials shall be furnished by the Contractor. All material shall be new and shall comply with the specifications described herein.

1.2 SPECIFICATION MODIFICATIONS

- A. It is understood that throughout this section these Specifications may be modified by appropriate items in Section 01015 – Specific Project Requirements, or as otherwise indicated on the Contract Drawings.

1.3 RELATED SECTIONS

- A. Section 01000 – General Project Requirements.
- B. Section 01015 – Specific Project Requirements.
- C. Section 01016 – Water Mains Near Sewers.
- D. Section 01300 – Submittals.
- E. Section 01320 – Construction Progress Documentation.
- F. Section 02200 – Earthwork.
- G. Section 02250 – Trenching, Pipe Embedment and Backfill.
- H. Section 02575 – Surface Restoration.
- I. Section 02702 – Testing Requirements for Sanitary Sewer: Mains and Manholes.

1.4 CODES AND STANDARDS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - ASTM F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
 - ASTM D2241 Standard Specification for Polyvinyl Chloride (PVC) Pressure- Rated Pipe (SDR Series).
 - ASTM D3139 Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
- C. American Water Works Association (AWWA):
 - AWWA C110 Ductile-Iron and Gray-Iron Fittings, 3 Inches Through 48 Inches (75 mm through 1,200 mm) for Water and Other Liquids.
 - AWWA C153 Ductile-Iron Compact Fittings, 3 In. Through 24 in. (76 mm through 610 mm) and 54 In. Through 64 In. (1,400 mm through 1,600 mm), for Water Service.

AWWA C900

Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In. (100 mm Through 1500 mm).

AWWA Manual M23

PVC Pipe - Design and Installation.

1.5 QUALITY ASSURANCE

- A. The Contractor is responsible for the quality assurance and quality control of the Work.
- B. Work shall be performed by a Contractor, with a proven record of performance for similar installations.
- C. Manufacturer:
 - 1. Shall be experienced in the design, manufacture and commercial supplying of the specified material for a minimum period of five (5) years.
 - 2. Shall be experienced in the design, manufacture, and commercial supplying of the specified size of pipe for a minimum period of three (3) years.
 - 3. Inspection and Testing shall be performed by the Manufacturer's quality control personnel in conformance with applicable standards. Testing may be witnessed by City, Design Professional, or approved independent testing laboratory. The Contractor shall provide certified test reports indicating that materials conform to all standards and specifications.
 - 4. Shall certify to the above minimum experience requirements.

1.6 CONTRACTOR SUBMITTALS

- A. Shop Drawings:
 - 1. Pipe and joint details, including pipe sample piece.
 - 2. Special, fitting, and coupling details.
 - 3. Gasket material details.
- B. Product Data:
 - 1. Laying and installation schedule complete with an explanation of all abbreviations used in the schedule.
- C. Certificates:
 - 1. Affidavit of compliance with applicable standards.
 - 2. Test certificates.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Pipe, fittings, and accessories shall be handled in accordance with the pipe manufacturer's recommendations.
- B. Equipment, tools, and methods used in handling and installing pipe and fittings shall not damage the pipe and fittings.
- C. Pipe shall not be stored uncovered in direct sunlight.
- D. Pipe materials delivered or stored on site shall be free of all damage, chips, cracks, gouges or ultraviolet (UV) degradation. Damaged materials shall be removed from the site and replaced at no additional cost to the City.
- E. See also Section 01000 – General Project Requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pipe:
 - 1. Pipe shall conform to ANSI/AWWA C900, as applicable.

2. At a minimum, the dimension ratio of all pipe sizes shall be DR 21 in accordance with ANSI/AWWA C900.
 3. The pipe minimum inside diameter and location shall be as indicated on the drawings.
 4. Gaskets shall conform to ASTM F477 and be synthetic rubber. Natural rubber gaskets are not acceptable.
 5. Pipe Color:
 - i. Pipe interior and exterior shall be **GREEN** or **WHITE**. Blue pipe is not acceptable.
 - ii. Color Code and sample piece shall be supplied with shop drawings prior to pipe approval.
 6. Each pipe and fitting shall have the following information plainly and permanently marked with waterproof paint thereon:
 - i. Date of manufacture code.
 - ii. Manufacturer's name or trademark.
 7. Control tests:
 - i. Quality control tests shall be performed during the manufacture of the pipe as required in AWWA C900.
- B. Fittings:
1. Fittings shall conform to AWWA C110 or AWWA C153 and shall be ductile iron. Fittings shall be mechanical joint or push-on-type joint.
 2. Fittings shall have pressure rating of not less than that specified for the pipe.
 3. All fittings shall have pressure rating and letters "DI" or "DUCTILE" cast on the fitting.
- C. Joints:
1. Joints shall be push-on type and meet the requirements of ASTM D3139. Gaskets shall meet the requirements of ASTM F477. Gaskets of natural rubber are not acceptable.
 2. Joint lubricant shall be a vegetable based lubricant. Petroleum or animal based lubricants are not acceptable.
 3. Restrained Joint PVC 4" -24" shall be C900, Eagle Loc, Diamond Lok, Certainteed Certa-lok or Fusible C900.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Pipe shall be carefully examined for cracks and other defects immediately before installation; spigot ends and bells shall be examined with particular care.
- B. All defective pipe and fittings shall be marked as such removed from the site of the work.

3.1 CUTTING PIPE

- A. Cutting shall comply with the pipe manufacturer's recommendations and with Chapter 7 of AWWA Manual M23.
- B. Cuts shall be smooth, straight, and at right angles to the pipe axis.
- C. After cutting, the end of the pipe shall be dressed to remove all roughness and sharp edges and shall be beveled in accordance with the manufacturer's instructions.

3.3 JOINTING

- A. Jointing shall conform to the pipe manufacturer's instructions and recommendations.
- B. All surfaces for gasketed joints shall be lubricated immediately before the joint is complete.
- C. Gaskets and lubricants shall be supplied by the pipe manufacturer, shall be suitable for use in potable water, shall be compatible with the pipe materials, shall be stored in closed containers, and shall be kept clean.
- D. Each spigot shall be suitably beveled to facilitate assembly.

3.4 CLOSURE PIECES

- A. A shop fabricated closure piece is required at the connections to existing pipe.

End of Section