

CHAPTER 3.10

PVC PLASTIC SEWER PIPE

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3.10.005 GENERAL. This Chapter covers the requirements for PVC Plastic Sewer and Storm Drain Pipe to be used in mains and laterals.

3.10.010 PIPE. PVC plastic sewer pipe shall be made of compound conforming to ASTM D-1784 with a cell classification of 13364-B with a minimum tensile modular of 500,000 psi. PVC sewer pipe must meet the entire dimensional, chemical, and physical requirements outlined in ASTM D-3034, shall have a SDR of thirty five (35). Pipe shall carry the IAPMO UPC or approved Seal of Approval or as otherwise specified by the City. SDR and laying length may be modified as conditions dictate when approved by the City Engineer.

A. PVC sewer pipe shall be installed according to the requirements of ASTM D-2321 and the manufacturer's requirements.

3.10.015 JOINTS. Joints for PVC plastic sewer pipe shall be of the rubber gasket bell and spigot type, and the rubber gaskets shall conform to ASTM D-1869.

3.10.020 FITTINGS. Fittings shall be made of PVC plastic conforming to ASTM D-1784, have a cell classification as outlined in ASTM D-3034, and carry the IAPMO UPC Seal of Approval.

3.10.025 PIPE LAYING. All pipe installation shall proceed upgrade on a stable foundation with joints closely and accurately fitted. Installation requirements of the manufacturer shall be rigidly adhered to.

A. Rubber gaskets shall be fitted properly in place and care shall be taken in joining the pipe units to avoid twisting of gaskets. Joints shall be clean and dry and a joint lubricant, as recommended by the pipe supplier, shall be applied uniformly to the mating jointing surfaces to facilitate easy positive joint closure.

B. Pipe shall be installed with uniform bearing under the full length of the barrel, with suitable excavations being made to receive pipe bells.

C. Select material shall be compacted around the pipe to firmly bed the pipe in position. If adjustment of position of a pipe length is required after being laid, it shall be removed and rejoined as for a new pipe. When laying is not in progress, the ends of the pipe shall be closed with a tight-fitting stopper to prevent the entrance of foreign material.

D. In addition to the above requirements, all pipe installation shall comply to the specific requirements of the pipe manufacturer.

3.10.030 GRAVEL FOUNDATION FOR PIPE. Wherever the subgrade material does not afford a sufficiently solid foundation to support the pipe and superimposed load, it shall be excavated to such depth as may be necessary and replaced with crushed rock or gravel compacted into place. Gravel foundation material for pipe shall be placed only when, and to the depth, requested by the Engineer or specified on the Drawings.

A. Gravel for PVC pipe foundations shall be clean crushed rock or gravel with one-hundred (100) percent passing a one (1) inch screen and maximum of five (5) percent passing a No. 4 sieve.

3.10.035 INSTALLATION REQUIREMENTS FOR LINE AND GRADE. All sewer pipe shall be installed accurately to the defined line and grade with the following limits:

A. Variance from established line and grade shall not be greater than one thirty-second ($1/32$) of an inch per inch of pipe diameter and not to exceed one-half ($1/2$) inch, provided that such variation does not result in a level or reverse sloping invert; provided also, that variation in the invert elevation between adjoining ends of pipe, due to non-concentricity of joining surface and pipe interior surfaces, does not exceed one sixty-fourth ($1/64$) inch per inch of pipe diameter, or one-half ($1/2$) inch maximum.

3.10.040 PIPE EMBEDMENT. All pipe shall be protected from lateral displacement and possible damage resulting from impact or unbalanced loading during backfilling operations by being adequately bedded in suitable embedment material.

A. The bottom of the trench shall be of stable materials. In general, coarse-grained soils, free of rocks and stones, such as graded crushed rock, gravel, sand, and other granular materials, are considered stable materials. A stable material shall be placed and compacted under the pipe haunches and up to the springline in uniform layers not exceeding ten (10) inches in depth. When bedding is required, the same material should be used for both bedding and haunching. Stable material, free of rocks and stones, shall be used to backfill the trench from the springline of the pipe to a point at least twelve (12) inches above the top of the pipe. Each ten (10) inch layer of bedding, haunching and initial backfill shall be placed, and then carefully and uniformly compacted to ninety-five (95) percent of AASHTO T-180 density. Extra-fine sand, clay, silt, or large soil lumps shall not be allowed as bedding, haunching, or initial backfill material. The remaining backfill over the top of the initial backfill shall be placed in accordance with Chapter 3.06. No bedding material shall be used unless accepted by the City Engineer. Samples of the materials shall be submitted by the Contractor a sufficient time in advance of intended use to enable its inspection and testing.

3.10.045 TESTS. The Contractor will be required to conduct an air test and a recorded video inspection, to be presented with the inspection log to the City's Public Works Department after the acceptance of the inspection, in the presence of the City Engineer or his representative. If these tests prove to be inconclusive, any or all of the other required tests shall be conducted in the presence of the City Engineer or his representative. Tests shall be performed as follows:

A. Video Inspection Test. In conducting this test the contractor or developer shall have all newly installed sewer mains video inspected and shall provide a written log of the actual footage to every service lateral and each manhole location. The video inspection shall be witnessed by the City Engineer or his representative. If the video shows broken, misaligned, displaced pipe, or other defects, the defects designated by the City Engineer or his representative shall be repaired by the contractor or developer at their expense. The repairs shall then be reinspected with the video inspection. After acceptance of the inspection, the videos and their logs shall be turned over to the Public Works Department of the City.

B. Infiltration Test. The Contractor shall furnish labor, equipment, and materials, including pumps, and shall assist the City Inspector in making infiltration tests of the completed sewer before it can be placed into service. The Contractor shall furnish and install the measuring weirs or other measuring devices. The length of line to be tested at any time shall be subject to the approval of the City Engineer. The maximum allowable infiltration shall be determined by the city Engineer or his representative. If the quantity of infiltration is in excess of the maximum allowable, the leaking joints shall be repaired to the satisfaction of the City Engineer at the expense of the

Contractor.

C. Air Testing. The Contractor or his representative (a qualified firm or individual agreed upon by the City and the Contractor) shall furnish labor, equipment, and materials, including pumps and compressors, and shall perform, in the presence of the City Inspector, air tests of the completed pipe before it can be placed in service. Each section of sanitary sewer pipeline between manholes shall be tested after all the four (4) inch service laterals (and plugs) have been installed. Each test section shall be pressurized to 4.0 psi. For the purpose of stabilizing the air pressure in each test section, the 4.0 psi pressure shall be maintained for a two (2) minute period. Each test section shall then be repressurized to 4.0 psi for a period of four minutes. The test section shall be accepted if, after four minutes, the pressure gauge indicates 3.5 psi or greater. Failure of the Contractor's testing equipment to properly function shall render the test unacceptable. All faulty sections of pipeline shall be repaired and retested until the minimum air testing requirements have been met.

3.10.050 SEWER LATERAL CONNECTIONS. All sewer lateral service lines shall be marked in the curb with the placement of a #20 Steel nail in the concrete. All new or replaced sewer laterals shall have a sewer lateral clean-out, purchased from the City, and shall be placed at the property line and buried six (6) inches below finish grade, as shown on the City Standard Drawings. All sewer lateral connections into new sewer mains shall be through pre-formed wyes. All connections into existing sewer mains shall be done with a sewer tapping machine or hole saw and using a Romac Style CB Saddles or a PVC Insert-A-Tee, for the appropriate size for sewer lateral and for the sewer main, and as shown on the City Standard Drawings. All replaced sewer laterals shall be constructed to the newest City Standards and when the termination of the replace sewer lateral is within three (3) feet of the sewer main a connections into existing sewer mains shall be done and using a Romac Style CB Saddles or a PVC Insert-A-Tee, unless the replaced sewer lateral was connected through a pre-formed wye fitting in the existing sewer main. This to be done by property owner, developer or subdivider at their expense.