SECTION 40

PIPE MATERIAL FOR GRAVITY SEWERS

40. 1 GENERAL

Pipe used in gravity sewer construction shall be polyvinyl chloride (PVC) or ductile iron pipe (DIP). Concrete pipe use may be allowed if prior approval is obtained from the CITY. Where reference is made to an ASTM, ANSI, or AASHTO designation, it shall be the latest revision.

The CONTRACTOR shall be responsible for all materials furnished and storage of same, until the date of substantial completion. He shall replace at his expense all materials found to be defective or damaged in handling or storage. The CONTRACTOR shall, if requested by the CITY, furnish certificates, affidavits of compliance, test reports, or samples for check analysis for any of the materials specified herein. All pipe delivered to project site for installation is subject to random testing for compliance with the designated specifications.

40. 2 PIPE MATERIALS

40. 2. 1 PVC GRAVITY SEWER PIPE

PVC Gravity Sewer Pipe (4"-15"), ASTM D3034, SDR 35. Uniform minimum "pipe stiffness" at five (5) percent deflection shall be 46 psi. The joints shall be integral bell elastomeric gasket joints manufactured in accordance with ASTM D3212 and ASTM F477. Applicable UNI-Bell Plastic Pipe Association standard is UNI-B-4.

PVC Gravity Sewer Pipe (18"-27"), ASTM F679, SDR35. Uniform Minimum "pipe stiffness" at five (5) percent deflection shall be 46 psi. The joints shall be integral bell elastomeric gasket joints manufactured in accordance with ASTM D3212 and ASTM F477. Applicable UNI-Bell Plastic Pipe Association standard is UNI-B-7.

All PVC pipe shall bear the NSF-DW seal. The minimum standard length of pipe shall be thirteen (13) feet.

40. 2. 2 DIP GRAVITY SEWER PIPE

Ductile iron pipe shall conform to ANSI/AWWA A21.51/C151, class thickness designed per ANSI/AWWA A21.50/C150, with mechanical or push-on joints. An interior protective lining of coal tar epoxy shall be provided with a minimum dry thickness of 30 mils. Ductile iron gravity sewers, where called for by the CITY, shall be wrapped with polyethylene film, AWWA C105. (See approved manufacturer's list in appendix.) The minimum standard length of pipe shall be eighteen (18) feet.

40. 2. 3 REINFORCED CONCRETE PIPE

Reinforced concrete pipe shall conform to ASTM designation C76, Classes III, IV or V. For pipes thirty (30) inches or more in diameter, the length of the unit shall be not less than eight (8) feet. An interior protective lining of coal tar epoxy shall be provided with a minimum dry thickness of thirty (30) mils. (See approved manufacturer's list in appendix.)

40. 2. 4 PIPE MARKINGS

All pipe shall have a homing mark on the spigot provided by the manufacturer. On field cut pipe, CONTRACTOR shall provide homing mark on the spigot in accordance with manufacturer’s recommendations. Reinforced concrete pipe shall have markings indicating the minor axis of the elliptical reinforcement.

40. 3 JOINT MATERIALS

40. 3. 1 PVC PIPE

PVC sewer pipe joints shall be flexible elastomeric seals per ASTM D 3212.

40. 3. 2 DUCTILE IRON PIPE

Ductile iron pipe and fitting joints shall be "push-on" or mechanical joints conforming to ANSI A21.11.

40. 3. 3 CONCRETE PIPE

Concrete pipe joints shall conform to ASTM C 443 for flexible gasket material.

40. 3. 4 JOINTS FOR DISSIMILAR PIPE

Joints between pipes of different materials shall be made with a flexible mechanical compression coupling with No. 304 stainless steel bands. (See approved manufacturer's list in appendix.)

40. 4 FITTINGS

Unless otherwise specified, wye branches shall be provided in the gravity sewer main for service lateral connections. Wyes shall be six (6) inches inside diameter, unless otherwise approved by the CITY. All fittings shall be of the same material as the pipe.

Plugs for stub outs shall be of the same material as the pipe, and gasketed with the same gasket material as the pipe joint, or be of material approved by the CITY. The plug shall be secured to withstand test pressures specified in Section 44 of these specifications.

40. 5 INSPECTION AND TESTING

40. 5. 1 GENERAL

Each length of pipe shall bear the name or trademark of the manufacturer, the location of the manufacturing plant, and the class or strength classification of the pipe. The markings shall be plainly visible on the pipe barrel. Pipe which is not marked clearly is subject to rejection. All rejected pipe shall be promptly removed from the project site by the CONTRACTOR.

40. 5. 2 MISCELLANEOUS INSPECTION AND TESTING REQUIREMENTS

All pipe and accessories to be installed under this Contract shall be inspected and tested at the place of manufacture by the manufacturer as required by the Standard Specifications to which the material is manufactured.

Each length of pipe shall be subject to inspection and approval at the factory, point of delivery, and site of work. If requested by the CITY, a sample of pipe to be tested shall be selected at random by the CITY or the testing laboratory hired by the CITY. When the specimens tested conform to applicable standards, all pipe represented by such specimens shall be considered acceptable based on the test parameters measured. Copies of test reports shall be available before the pipe is installed in the project.

In the event that any of the test specimens fail to meet the applicable standards, all pipe represented by such tests shall be subjected to rejection. The CONTRACTOR may furnish two (2) additional test specimens from the same shipment or delivery, for each specimen that failed and the pipe will be considered acceptable if all of these additional specimens meet the requirements of the applicable standards. All such retesting shall be at the CONTRACTOR'S expense.

Pipe which has been rejected by the CITY shall be removed from the site of the work by the CONTRACTOR and replaced with pipe which meets these specifications.