Section 5

Gravity Sanitary Sewers
Polyvinyl Chloride (PVC) Pipe and Fittings

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5.01 General

A. PVC pipe shall be allowed for use as gravity sewer pipe where compatible with the specific conditions of the project. IRCDUS may require the use of material other than PVC during construction permit review or by IRCDUS field personnel during construction, if it is determined that PVC pipe is unsuitable for the particular application.

B. PVC gravity sewer pipe can be used up to a depth of sixteen feet as specified herein. All pipe used for depths greater than 16 feet, shall be approved by IRCDUS.

5.02 Pipe and Fittings

A. Gravity sewer mains and laterals shall be extra strength PVC pipe and shall conform to the latest ASTM Designation D3034-SDR26. Fittings installed in PVC pipe shall conform to the same specifications as the pipe in which they are installed.

B. In addition to the requirements of ASTM specifications, the pipe shall not be out-of-round or crooked in alignment as determined by the Engineer of Record and/or IRCDUS. Any length of pipe 6 inches or greater in diameter whose inside diameters measured at right angles to each other vary more than ¼ inch may be rejected.

C. PVC pipe shall be a maximum of 20 feet in length and shall be in accordance with IRCDUS Approved Manufacturers' Products List.

D. Material shall meet or exceed the requirements of ASTM Designation 1784, Type 1, Grade 1 (12454-B). All P.V.C. materials shall be stored in accordance with the manufacturers' specifications (not in direct sunlight). PVC pipe and fittings, which show signs of ultraviolet degradation, are considered substandard and unfit for use, and will be rejected by the IRCDUS's Engineer.

E. All wyes, fittings, laterals, and manhole couplings shall be manufactured by same manufacturing company as the pipe or approved equal, see Approved Manufacturers' Product List. Adapters shall be compatible to the approved pipe and appurtenances. All joints shall be rubber gasketed.

F. The pipe shall be "green" in color.

5.03 Pipe Joint Seals

A. Joint seals in PVC pipe and fittings shall comply with ASTM Designation D3212.

B. The joint shall remain sealed by its own compression. Adhesives shall not be necessary to weld or fuse the gaskets together. No solvent weld joints are permitted.

C. The compressive stress which is developed in the gasket material shall be as high as is permitted by the strength of the bell in ring tension, with due regard to factor of safety, and this stress shall be at its maximum value when the joint is completely assembled.

5.04 Retrofitting Sewer Laterals

A. Gravity sewer systems shall be designed such that laterals are provided to serve all units and lots. In cases where sewer laterals must be added to a gravity sewer main, connections shall be made by installing a sewer service wye branch and a sleeve-type adapter, whichever is specified by IRCDUS for the particular application.

5.05 Submittals

A. Before starting fabrication of the PVC pipe and fittings, the Contractor shall submit one set of complete working drawings (shop drawings) to the Engineer of Record and IRCDUS for approval. Such drawings shall show the pipe, fittings, manholes, and any other appurtenances to be installed. Where special fittings are required, they shall be shown in large detail with all the necessary dimensions. The Engineer of Record shall review the drawings and notify IRCDUS of the drawings approved and not approved. IRCDUS shall also review the drawings and coordinate approvals and disapprovals with the Engineer of Record and Contractor.

5.06 Marking

A. Location tape is required over all pipes. Tape is to be installed 12” below proposed finished grade and additional tape shall be adhered directly on top of the pipe if required by IRCDUS engineering.

5.07 Storage

A. PVC pipes are not to be stored where exposed to direct sunlight because of possible ultraviolet light degradation. Pipes stored on the jobsite are to be covered. PVC pipes that exhibit discoloration or fading from their original color will be rejected by IRCDUS field representatives.

5.08 Installation

A. Handling and Protection of Pipe: Unless otherwise noted on the drawings or in other sections of this specification, the pipe shall be handled and installed in strict accordance with the manufacturers' instructions. The Contractor shall use every precaution during construction to protect the pipe against the entry of non-potable water, dirt, wood, small animals, and any other foreign material that would hinder the operation of the pipeline. Where the groundwater elevation is above the bottom of the trench, the Contractor shall provide suitable dewatering equipment at no additional cost to the Owner. All piping shall be placed in a dry trench, unless otherwise approved by IRCDUS.

B. Depth of Cover and Pipe Elevation: Unless otherwise shown on the drawings, or otherwise authorized by IRCDUS, all pipe shall have a minimum cover of 36 inches. Contractor shall determine top of pipe elevation and top of ground elevation for every two joints of pipe installed using a level. Pipe must have the minimum cover described above and must be within +/- 0.2 feet of the top of pipe elevation indicated on the drawings. Installed pipe, which does not meet these requirements, shall be reinstalled until it meets these requirements. Contractor shall record top of pipe and top of ground elevations and the locations of where these elevations were determined and submit this information to IRCDUS. IRCDUS reserves the right to have Contractor excavate and check top of pipe and top of ground elevations to see if they conform to the aforementioned requirements, at no additional cost to IRCDUS.

END OF SECTION