Section 7

Wastewater Force Mains
Polyvinyl Chloride Pipes (PVC) and Fittings

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7.01 General

A. PVC pipe shall be allowed for use as wastewater force main 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. The pipe used for wastewater shall be “green” in color.

C. All pipe shall be identified by its nominal pipe size, plastic pipe material code, SDR class, pressure rating, ASTM Designation, manufacturers’ name, production code, and the National Sanitation Foundation seal for potable water (NSF-pw).

7.02 Pipe for Sizes 4 inches to 48 inches in Diameter

A. All pipe intended for conveying or transmitting wastewater shall be designed for a minimum working pressure of 150 psi.

B. PVC chloride pressure pipe shall conform to AWWA Standards Specifications C900 latest revision, or C909, latest revision and ASTM D1784 and D2241, latest revision. PVC pressure pipe shall be made from Class 12454-A or Class 12454-B material and conform to the outside diameter of cast iron pipe.

C. PVC pressure pipe less than 4” diameter shall be DR-21, PR-200

D. PVC pipe shall be purchased in accordance with IRCDUS Approved Manufacturers’ Products List.

7.03 Joints

A. Joints for PVC pressure pipe shall be bell and spigot push-on rubber gasket type only. No solvent weld or threaded joints will be permitted.

B. IRCDUS may consider other type joints for specific installation upon submission of specifications and approval.

C. Restraint joints, when required, shall be in accordance with IRCDUS Approved Manufacturers’ Products List.

7.04 Fittings

A. All underground fittings shall be either ductile iron push-on, restrained, or mechanical joint. Mechanical joints shall conform to AWWA Standard Specifications C110/A21.10 or C153/A21.53 latest revisions. Fittings shall be amine cured novalac epoxy (Protecto 401 or similar). The epoxy material shall be applied in 1 coat with a minimum dry film thickness of 40.0 mils l. All aboveground exposed fittings shall be flanged.

B. The pressure rating shall be 350 psi (Class 350).

C. Joint restraint, when required; shall be in accordance with IRCDUS Approved Manufacturers' Products List.

7.05 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, valves, and other appurtenances to be installed. Where special fittings are required, they shall be shown in large details 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.

7.06 Marking

A. Number 10 stranded conductor copper trace wire shall be spiral wrapped or affixed to the top of the pipe. See Trace Wire Details Drawing M-14 for specifications regarding installation.

B. Trace wire is required over or around all pipes.

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

7.07 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.

7.08 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 IRCDUS. 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 does meet 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 cost to IRCDUS.

END OF SECTION