

CONSTRUCTION SPECIFICATION

VA-745. PLASTIC PIPE

1. **SCOPE**

The work will consist of furnishing and installing plastic pipe and the necessary fittings specified herein or as shown on the drawings.

2. **MATERIALS**

Poly Vinyl Chloride (PVC) Pipe

PVC Plastic Pipe - Schedules 40, 80, 120ASTM D1785

PVC Plastic Pipe Fittings, Schedule 40ASTM D2466

PVC Pressure Rated Pipe - SDR Series 4-inch through 12-inch
Diameter.....AWWA C900
ASTM D2241

PVC Pressure Rated Pipe - SDR Series 14-inch through 48-inch
Diameter.....AWWA C905

PVC Plastic Drain, Waste, and Vent Pipe and FittingsASTM D2665

Joints for IPS PVC Pipe Using Solvent Weld CementASTM D2672

ABS and PVC Composite Sewer Pipe.....ASTM D2680

Type PSM PVC Sewer Pipe and FittingsASTM D3034

PVC Large-Diameter Gravity Sewer Pipe and Fittings.....ASTM F679

PVC Smooth-Wall Underdrain Systems for Highway, Airport, and
Similar DrainageASTM F758

PVC Profile Gravity Sewer Pipe and Fittings Based on Controlled
Inside Diameter.....ASTM F794

PVC Corrugated Sewer Pipe with a Smooth Interior and FittingsASTM F949

Polyethylene (PE) and High Density Polyethylene (HDPE) Plastic Pipe

12 to 60-inch Annular Corrugated Profile-Wall PE Pipe and FittingsASTM F2306

PE (SIDR-PR) Based on Controlled Inside DiameterASTM D2239

PE (DR-PR) Based on Controlled Outside DiameterASTM D3035

3 to 6-inch Corrugated PE Pipe and FittingsASTM F405

8, 10, 12, 15, 18 and 24-inch Corrugated PE Pipe and Fittings.....ASTM F667

10 to 120-inch Corrugated PE Profile Wall Sewer and Drain Pipe.....ASTM F894

3 to 10-inch Corrugated PE PipeAASHTO M252

12 to 60-inch Corrugated PE PipeAASHTO M294

Plastic Pipe and Fittings.....	ASTM D3350
SDR-PR Based on Controlled Outside Diameter	ASTM F714
Heat Fusion Joining of Polyolefin Pipe and Fittings	ASTM D2657

Acrylonitrile-Butadiene-Styrene (ABS) Pipe

ABS Plastic pipe, Schedules 40 and 80	ASTM D1527
ABS and PVC Composite Sewer Pipe.....	ASTM D2680

a. Fittings and Joints

Where pressure pipe is specified, fittings will have a design capacity equal to or exceeding that specified for the pipe to which it is attached. Fittings will be cast iron, steel, one piece injection molded plastic fitting, or fabricated from plastic pipe and one piece injection molded plastic fittings.

Where nonpressure pipe is specified, the fittings will be of the same or similar materials as the pipe and will provide the same durability and strength as the pipe.

Joints may be bell and spigot type with elastomeric gaskets, coupling type with elastomeric gasket on each end, or solvent cemented. When a lubricant is required to facilitate joint assembly, it will be a type having no detrimental effect on the gasket or pipe material.

Mechanical joints (split couplings and snap couplings) may be used when joining PE pipe and fittings with nonpressure flow and a free draining sand or gravel bedding material. Elastomeric-sealed mechanical joints will be used when joining PE pipe and fittings under pressure flow or where seepage cannot be tolerated.

Pipe joints will conform to the details shown on the drawings and specified herein.

Pipe will be installed and joined in accordance with the manufacturer's recommendations, except as otherwise specified.

3. HANDLING AND STORAGE

Pipe will be delivered to the job site and handled by means which provide adequate support to the pipe and does not subject it to undue stresses or damage. When handling and placing plastic pipe, care will be taken to prevent impact blows, abrasion damage, and gouging or cutting (by metal surfaces or rocks). All special handling requirements of the manufacturer will be strictly observed. Special care will be taken to avoid impact when the pipe must be handled at temperatures of 40°F (4.4°C) or less.

Pipe will be stored on a relatively flat surface so that the barrels are evenly supported. Unless the pipe is specifically coated to withstand exposure to ultraviolet radiation, it will be covered with an opaque material when stored outdoors for a period of 15 days or longer.

4. LAYING AND BEDDING THE PIPE

Plastic pipe conduits and fittings will be installed as shown on the drawings and specified herein. The pipe will be laid so that there is no reversal of grade between joints, unless otherwise shown on the drawings. The pipe will be placed with the bell end upstream, unless otherwise specified. The pipe will be carefully placed on the bedding or into the pipe trench.

Care will be taken to prevent distortion and damage during unusually hot (over 90°F) or cold weather (under 40°F). After the pipe has been assembled in the trench, it will be allowed to reach ground temperature before backfilling to prevent pull out of joints due to thermal contraction.

The pipe ends and the couplings will be free of foreign material when assembled. During the placement of the pipe, each open end of the pipeline will be closed off by a suitable cover or plug at the end of work on the pipeline each day and until work resumes or installation is complete.

Perforated pipe will be laid with the perforations down and oriented symmetrically about the vertical centerline. Perforations will be clear of any obstructions when the pipe is laid.

Pipe will be firmly and uniformly supported throughout the entire length. Bell-holes will be made in the bedding under bells or couplings and other fittings to prevent the pipe from being supported by fittings.

- a. Earth Bedding. When bedding is specified, the pipe will be firmly and uniformly bedded in a shaped bedding groove that closely conforms to the bottom of the pipe for a depth equal to a minimum of 1 inch or 5 percent of the diameter of the pipe, whichever is greater. The bedding material will be free of rocks or stones greater than 1 inch diameter and earth clods greater than 2 inch diameter.
- b. Sand or Gravel Bedding, or Drain Fill. When sand or gravel bedding is specified, the pipe will be firmly and uniformly placed on a sand or gravel bed. Sand or gravel fill will be carefully placed and compacted as specified herein and as shown on the construction drawings.

5. BACKFILL

The pipe will be held down during backfilling to the top of the pipe to prevent its being lifted from its original placement.

Backfill will be compacted to the degree required to prevent settlement of the backfill material after construction.

The water content of cohesive backfill material will be such that, kneaded in the hand, the soil will form a ball which does not readily separate. For non-cohesive sand and gravel backfill material, water content is not a concern for thin lifts.