

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION
IRRIGATION WATER CONVEYANCE
CORRUGATED, RIBBED OR PROFILE WALL THERMOPLASTIC PIPELINE
(Acre)
CODE 430-JJ

WATER QUALITY

Consideration shall be given to the effects of installing the pipeline on vegetation that may have been located next to the original conveyance, erosion at the construction site and the movement of sediment to water courses.

MINIMUM DEPTH OF COVER

The pipeline shall be buried. Where there is no hazard to the pipe from traffic crossings, freezing, deep soil cracking or farm operations the minimum cover shall be 18-inches. Where cover is obtained by building fill over the pipeline the minimum top width shall be 1 1/2 times the pipe diameter and the side slopes shall be 6:1 or flatter. Traffic crossings shall have a minimum of 2.5-feet of cover.

TRENCH CONSTRUCTION

The trench at any point below the top of the pipe shall be wide enough to permit the pipe to be easily placed and joined, and to allow the initial backfill material to be uniformly placed under the haunches and along the sides of the pipe. The minimum trench width is shown in Figure 2.

The trench bottom shall be uniform so that the pipe lays on the bottom without bridging. Clods, rocks and uneven spots that can damage the pipe or cause nonuniform support shall be removed. If rocks, boulders or unstable material is encountered in the trench bottom, the trench shall be excavated a minimum of 4-inches below grade and filled with initial backfill material.

Provisions shall be made to assure safe working conditions if unstable soil, trench depth, or other conditions can be hazardous to personnel working in the trench. Trench banks more than 5-feet high shall be

shielded, shored or sloped back to a stable slope if personnel are exposed to danger.

PIPE PLACEMENT

The pipe shall be handled in a manner to prevent damage during transportation, placement and backfilling. Pipe shall not be dropped or allowed to roll freely down skids. In hot weather, after the pipe has been assembled, it shall be allowed to cool to ground temperature before backfilling to prevent pullout of the joints. The pipe shall be uniformly and continuously supported over its entire length on firm stable material. Blocking or mounding shall not be used to bring the pipe to final grade. Where bells, fittings or connections extend below pipeline grade, holes shall be excavated in the trench bottom to allow for unobstructed assembly of the joint and to permit the body of the pipe to be in contact with the trench bottom throughout its entire length.

JOINTS AND CONNECTIONS

All joints and connections shall be capable of withstanding the design maximum pressure head for the pipeline without leakage and shall leave the flow area free of any obstructions. Joints, fittings and appurtenances shall be installed according to manufacturer's recommendations.

TESTING

Prior to backfilling at the joints, the line shall be slowly filled with water. Adequate provisions shall be made for air release during filling operations. The pressure head shall be slowly built up to the maximum design pressure head of the system and held at design pressure head for 6-hours. While this pressure head is maintained all exposed pipe fittings and appurtenances shall be examined for leaks. Any leaks shall be repaired and the pipeline retested.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resource Conservation Service.

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It shall also be demonstrated by testing that the pipeline will function properly. At or below design capacity, there shall be no objectionable flow conditions. Objectionable flow conditions shall include water hammer, continuing unsteady delivery of water, damage to the pipeline, or detrimental discharge from control valves, or vents.

INITIAL BACKFILL

All special backfilling requirements of the pipe manufacturer shall be met. Hand or mechanical compaction methods shall be used to compact the initial backfill. The initial backfill material shall be Class I, II, or III as described in Figure 1. Initial backfill material shall be placed from the bottom of the trench to at least 0.7 of the pipe diameter as shown in Figure 2. The initial backfill material shall be compacted firmly in 4-inch to 6-inch lifts around the pipe. Each lift shall be shoveled and tamped between the pipe and the side of the trench to provide satisfactory pipe support. Care shall be taken to assure the backfill is placed under the haunches of the pipe sufficiently to fill all voids and provide uniform bearing. At the time of placement, the moisture content of the material shall be such that compaction can be obtained. The pipeline shall be held in place, if necessary, during installation of the initial backfill.

FINAL BACKFILL

The final backfill located within 9-inches of the top of the pipe shall be soil or sand free of hard earth clods or stones greater than 1 ½ -inch diameter. The remaining final backfill shall be free of rocks and clods greater than 6-inches in diameter. The material shall be placed and spread in approximately uniform layers so that there will be no unfilled spaces in the backfill. The backfill shall be placed to the level of the natural ground, or to the design grade required to provide the minimum depth of cover after settlement.

FIGURE 1

INITIAL BACKFILL MATERIAL DESCRIPTION

Class of Select Initial

Backfill Material	Description
I	Angular ¼ to 1 ½-inch size, graded, crushed stone with a maximum of 10% non-cohesive fines.

II	Coarse sands (>0.5 mm) and gravels with a maximum particle size of 1 ½-inch including sands and gravels containing a maximum of 12% non-cohesive fines. Soil types GW, GP, SW and SP are included in this class.
III	Fine sand and clayey gravels, including fine sands, sand-clay mixtures and gravel-clay mixtures. Soil types GM, GC, SM, and SC are included in this class.

FIGURE 2 (NEXT PAGE)

BASIS OF ACCEPTANCE

The acceptability of the pipeline shall be determined by inspections to check compliance with all the provisions of this standard, including the design of the line, the pipe and pipe markings, the appurtenances, and the minimum installation requirements.

CERTIFICATION AND GUARANTEE

If requested by the State Conservation Engineer, the manufacturer shall certify that the pipe meets the requirements specified in this standard.

The installing contractor shall certify that the installation complies with the requirements of this standard. The contractor shall furnish a written guarantee that protects the owner against defective workmanship and materials for not less than one year and that identifies the manufacturer and markings of the pipe used.

MATERIALS

Appurtenances

Standard fittings shall be used, if available. Elbows, tees, reducers, valves, air valves, vents, stands and joints shall be of the size and material specified and as shown on the drawings. All fittings shall equal or exceed the same pressure rating of the pipe with which they are used. Fittings and appurtenances, such as valves, and vents, that are fabricated from steel shall be coated with a manufacturer's coating suitable for burial such as coal tar epoxy paint or a tape wrap. Elbows, tees, reducers and connectors fabricated from steel shall be lined with coal tar enamel or coal tar epoxy paint and coated with coal tar enamel, coal tar epoxy paint or a tape wrap. Lining and coating material shall be installed in accordance with the manufacturer's recommendations.

Pipe

Pipe and fittings shall equal or exceed the requirements of one of the following specifications. ASTM F 667 or AASHTO M294, Large Diameter Corrugated Polyethylene Tubing and Fittings.

Type C (corrugated inside and outside) and Type S (corrugated outside with smooth inner

liner) polyethylene pipe and fittings shall conform to ASTM Specification F 667 except that the pipe and fittings shall be manufactured from only the high density polyethylene (HDPE) compounds which conform with the requirements of Type III; Class C; Category 3, 4 or 5; Grade P33 or P34, as described in ASTM D 1248, Polyethylene Plastics Molding and Extrusion Materials.

ASTM F 894, Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe.

ASTM F 794, Poly(Vinyl Chloride) (PVC) Large Diameter Ribbed Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

AASHTO M304, Poly(Vinyl Chloride) (PVC) Ribbed Drain Pipe and Fittings Based on Controlled Inside Diameter.