NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

PIPELINE

(Ft.)

CODE 516

DEFINITION

Pipeline installed for conveying water for livestock or for recreation.

SCOPE

This standard applies to pipelines having an inside diameter of less than 4 inches. They are installed for livestock watering or for recreation areas.

PURPOSE

To convey water from a source of supply to points of use.

CONDITIONS WHERE PRACTICE APPLIES

Where conveyance of water in a closed conduit is desirable or necessary to conduct water from one point to another, to conserve the supply, or for reasons of sanitation.

DESIGN CRITERIA

For supplying livestock water, the installation shall have the capacity to provide at least 12 gallons for beef cattle and horses; 25 gallons for dairy cattle; and 1-1/2 gallons for sheep and goats. All capacities are in terms of gallons per head per day.

For recreation areas, the capacity shall be adequate for all planned uses of the water such as drinking, fire protection, showers, flush toilets and irrigation of landscaped areas.

Sanitary Protection

When water from the pipeline is likely to be used for human consumption, the requirements of the Ohio Department of Health for materials and installation must be met.

Pipe

Steel pipe shall meet the requirements specified in ASTM-A-120 or in AWWA Specification C-200. If because of local conditions, a coal-tar enamel protective coating is needed for steel pipe, the coating shall meet the requirements of AWWA Specification C-203. Plastic pressure pipe shall be suitable for underground use. The pipe shall conform to the requirements of the following ASTM specifications:

D 1785	Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
D 2104	Polyethylene (PE) Plastic Pipe, Schedule 40
D 2241	Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR)
D 1527	Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80

D 2282 Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR)
D 2239 Polyethylene (PE) Plastic Pipe (SDR-PR), Based on Controlled Inside Diameter
D 3035 Polyethylene (PE) Plastic Pipe (SDR-PR), Based on Controlled Outside Diameter
D 2447 Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter
D 2737 Polyethylene (PE) Plastic Tubing
D 2672 Bell-End Polyvinyl Chloride (PVC) Pipe
D 2740 Polyvinyl Chloride (PVC) Plastic Tubing

Pressure pipefittings shall conform to the requirements of the following ASTM specifications:

D 2466 Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40
D 2467 Socket-Type Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80
D 2464 Threaded Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80
D 2611 Butt Fusion Polyethylene (PE) Plastic Pipe Fittings, Schedule 80 (for IPS Pipe)
D 2610 Butt Fusion Polyethylene (PE) Plastic Pipe Fittings, Schedule 40 (for IPS Pipe)
D 3036 Socket-Type Polyvinyl Chloride (PVC) Plastic Line Couplings
D 2468 Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe Fittings, Schedule 40
D 2469 Socket-Type Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe Fittings, Schedule 80
D 2465 Threaded Acylonitrile-Butadiene-Styrene (ABSD) Plastic Pipe Fittings, Threaded, Schedule 80
D 2609 Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe
D 3261 Butt Heat Fusion Polyethylene (PE) Plastic Fittings, for Polyethylene (PE) Plastic Pipe and Tubing
D 2683 Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing
D 3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals

Solvents for solvent-welded pipe joints shall conform to the following ASTM specifications:

D 2564 Solvent Cements for Polyvinyl Chloride (PVC) Plastic Pipe and Fittings
D 2235 Solvent Cement for Acylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings
D 2855 Making Solvent-Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings

Rubber gaskets for pipe joints shall conform to the requirements of ASTM Specification F 477, Elastomeric Seals (Gaskets) for joining Plastic Pipe.

Provisions for Draining

Valves or unions shall be installed at low points in the pipeline so that it may be drained as needed.

Vents

For design velocities lower than 8 feet per second, some provisions for removing the air shall be included in the design. If parts of the line are above the hydraulic gradient, periodic use of an air pump will probably be required.

Joints

Watertight joints having strength equal to that of the pipe shall be used. Couplings must be of material compatible with that of the pipe. If they are made of material susceptible to corrosion, provisions must be made to protect them.

Depth

A minimum depth of 36 inches shall be used in Area 1; Area 2; Marion and Morrow Counties of Area 5; Richland, Ashland, Wayne, Stark, and Columbiana Counties of Area 3. All other areas of the State shall have a minimum depth of 30 inches.

Vegetation

Disturbed areas shall be established to vegetation or otherwise stabilized as soon as practicable after construction. Seedbed preparation, seeding, fertilizing, and mulching shall comply with instructions provided in technical guides.

Visual Resources

The visual design of pipelines in areas of high public visibility and those in fragile areas shall be carefully considered.

PLANS AND SPECIFICATIONS

Plans and specifications for installing pipelines shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

NATURAL RESOURCES CONSERVATION SERVICE
ENGINEERING STANDARD

PIPELINE

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Site Preparation

All trees, brush, stones, or other objectionable material shall be removed from the pipeline route and disposed of so that they will not interfere with construction, operation, or maintenance of the pipeline.

Placement

Pipelines shall be placed so that they are protected against hazards imposed by traffic, farm operations, freezing temperatures, or soil cracking. Other means of protection must be provided if the depth required for protection is impracticable because of shallow soils over rock or for other reasons. Abrupt changes in grade must be avoided to prevent rupture of the pipe. Trenches for plastic pipelines shall be free of rocks and other sharp-edged materials, and the pipe shall be carefully placed to prevent damage. Plastic pipelines may be placed by plow-in equipment if soils are suitable and rocks and boulders will not damage the pipe.

Testing

Pipelines shall be pressure tested by one of the following methods:

1. Before backfilling, fill the pipe with water and test at the design-working head or at a minimum head of 10 ft., whichever is greater. All leaks must be repaired, and the test must be repeated before backfilling.

2. Pressure test at the working pressure for 2 hours. The allowable leakage shall not be greater than 1 gal. Per diameter inch per mile. If the test exceeds this rate, the defect must be repaired until retests show that the leakage is within the allowable limits, but all visible leaks must be repaired.

Backfilling

All backfilling shall be completed before the line is placed in serve. For plastic or copper pipe, the initial backfill shall be of selected material that is free of rocks or other sharp-edged material that can damage the pipe. Deformation or displacement of the pipe must not occur during backfilling.

Plastic pipelines installed by the plow-in method require surface compaction and shaping in addition to the normal plow-in operations. Installation and backfilling shall be done in a workmanlike manner. Provisions shall be provided for stabilizing disturbed areas and controlling erosion, as necessary.