

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

PIPELINE

(Feet)

CODE 516

DEFINITION

Pipeline installed for conveying water for livestock or for recreation.

Scope

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

PURPOSES

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.

CRITERIA

Capacity

For supply livestock water, the installation shall have a capacity to provide at least 12 gal per head per day for beef cattle and horses, 25 gal for dairy cattle, and 1.5 gal for sheep and goats.

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

If water from the pipeline is likely to be used for human consumption, the requirements of the state health department 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, as shown in Tables 1 and 2.

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

Corrosion Protection

If steel pipe is used, protection against corrosion shall be provided. The procedures outlined in Practice Standard 430-FF and Design Note 12 provide the criteria.

Drainage

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

Vents

For design velocities lower than 8 ft/s, some provision shall be included in the design for removing air. If parts of the line are above the hydraulic gradient, periodic use of an air pump may be required.

Joints

Watertight joints that have the 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.

Vegetation

Distributed areas shall be established to vegetation or otherwise stabilized as soon as practicable after construction. Seedbed preparation, seeding, fertilizing, and mulching shall conform to the 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.

CONSIDERATIONS

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff and infiltration. Compare to centralized water facilities that have increased soil compaction because of traffic livestock, vehicles, and humans.
2. Effects on surface and ground water of broken pipelines.

Water Quality

1. The impact of water available at remote sites as a factor in keeping livestock out of streams and lakes, with the resulting reduction in bank erosion, sediment yield, and the direct deposit of manure in water courses.
2. Effects of bacteria, nutrients, salts and organic matter on surface and ground water because of increased recreation activity caused by the availability of water.
3. Effects of erosion and sediment yield from disturbed areas during construction.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental

Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that critical periods, such as spawning, eggs in gravels and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example, there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

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.

OPERATION AND MAINTENANCE

An operation and maintenance plan must be prepared by the Designer for use by the owner or other responsible for operating this practice. The plan should provide specific instructions for operating and maintaining the system to insure that it functions properly. It should also provide for periodic inspections and prompt repair or replacement of damage components.

Table 1.

Pressure pipe fitting shall conform to the requirements of the following ASTM specifications:

D 1527	Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80
D 1785	Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
D 2104	Polyethylene (PE) Plastic Pipe, Schedule 40
D 2239	Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter
D 2241	Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR)
D 2282	Acrylonitrile-Butadiene-Styrene (ABS) Plastic
D 2447	Polyethylene (PE) Plastic Pipe Schedules 40 and 80, Based on Outside Diameter
D 2672	Bell-End Polyvinyl Chloride (PVC) Pipe
D 2737	Polyethylene (PE) Plastic Tubing
D 2740	Polyvinyl Chloride (PVC) Plastic Tubing
D 3035	Polyethylene (PE) Plastic Pipe (SDR-PR), Based on Controlled Outside Diameter

Table 2.

Pressure pipe fitting shall conform to the requirements of the following ASTM specifications:

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

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

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