NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE GENERAL SPECIFICATIONS

LIVESTOCK PIPELINE

(Ft.)

CODE 516

SCOPE

The work shall consist of furnishing and installing the pipe, fittings, and appurtenances as specified, in order to convey water for livestock or wildlife.

PUBLIC AND PRIVATE UTILITIES

Utilities are defined to be public or private, overhead and underground power or communication lines, and any pipelines The landowner\operator\contractor shall conduct their own search and discovery for utilities in order to lessen or avoid potential damages, injuries or loss of life. Prior to construction, the owner\operator should complete an OK-ENG-45 UTILITIES INVENTORY & CONSTRUCTION RELEASE FORM to document known utilities in order to comply with State law prior to any ground disturbance and return it to a USDA-NRCS representative.

QUALITY CONTROL

Quality Control of all materials and construction procedures is the responsibility of the landowner and contractor. NRCS will make periodic review(s) of the work for the benefit of the agency which will include the final construction check.

MATERIALS

All materials shall conform to appropriate ASTM specifications.

Pipe. The pipe shall be new and meet the following requirements:

a. Steel pipe shall meet the requirements of ASTM Specification A-53 or AWWA Specification C-200. Steel pipe and fittings shall be zinc-coated (galvanized) in accordance with ASTM A-53.

b. Plastic pipe shall comply with one of the following specifications:

Kind of Pipe	ASTM
ABS	D-2282 (SDR-PR)
	D -1527 (Sch 40 and 80)
PE	D-2104 (Sch 40)
	D-2239 (SIDR 1/ -PR)
	D-2447 (Sch 4U and 80)
	D-2737 (PE Tubing-PR)
	D-3035 (SDR-PR)
PVC	D-1785 (Sch 40,80, and 120)
	D-2241 (SDR-PR)
	D-2672 (Sch 40, Bell End)

Plastic pipe shall be marked at no more than 5 feet intervals, to insure conformance with the above standards or ASTM Specifications. The markings shall include the following:

a. Nominal pipe size; e.g., 2".

b. Type of plastic pipe material in accordance with Standard Thermo-plastic Pipe Materials Designation Code; e.g., PVC 1120.
c. Pressure rating in psi for water at 73.4°F; e.g., 160 psi.
d. Standard of ASTM designation with which the pipe complies; e.g., ASTM D-2241.
e. Manufacturer's name or trademark.
f. Seal of approval of the National Sanitation Foundation, or of some other accredited laboratory.

1/ Based on inside diameter

Joints. Watertight joints having strength equal to that of the pipe shall be used. Couplers must be of similar material or completely insulated. Manufacturer's installation specifications shall be followed.

Accessories. All valves and appurtenances shall be of adequate capacity and suitable quality to withstand the design pressures and shall be installed in accordance with the manufacturer's recommendations.

Pressure Relief Valves. Pressure relief valves shall be no smaller than ¼ -inch nominal size for each diameter inch of the pipeline and shall be set at a maximum of 5 psi above the pressure rating of the pipe.

Air release and vacuum release valve outlets. Air release and vacuum release valve outlets shall be at least ½ -inch nominal diameter when specified for lines of 4-inch diameter or less, and at least 1 inch for lines of 5 inches to 8 inches in diameter.

PLACEMENT

Pipe shall be laid to the line and grade shown on the drawings or as staked in the field. Abrupt changes in grade must be avoided to prevent rupture of the pipe.

Pipe shall be placed in a ”snake-like" position if recommended by the manufacturer.

Trenches for plastic pipelines shall be free of rocks and other sharp-edged materials or be bedded with material free of rock.

Pipe shall be installed at sufficient depth below the ground surface to provide protection from hazards imposed by traffic crossings, farming operations, freezing temperatures, or soil cracking. The minimum depth of cover for pipe susceptible to any of these hazards shall be:

Pipe diameter (in.)	Depth of Cover (in.)
¾ through 2 ½	18
3 through 5	24
6 or more.	30

In areas where the pipe will not be susceptible to freezing and vehicular or cultivation hazards and the soils do not crack appreciably when dry, the minimum depth of cover may be reduced to:

Pipe diameter (in.)	Depth of Cover (in.)
¾ through 3	12
More than 3	18

In isolated locations where the terrain is rough or the soil is thin, minimum depth of cover maybe waived where other suitable protection can be provided and prior approval is obtained. Unless otherwise approved, suitable protection for surface or above ground installation shall be one of the following:

1. Install plastic pipe manufactured from high density black, PE3408, NSF approved polyethylene pipe resin. The pipe should be 200 PSI, SIDR 7, ASTM D-2239 or equivalent; 160 PSI may be used where mounding of earthfill can provide minimum 2- 6 inches protective cover for the polyethylene pipe.

2. Steel Pipe

3. Plastic Pipe installed in encasement pipe or equivalent at vehicle crossings.

Plastic pipelines may be placed by plow-in equipment if soils are suitable and rocks will not damage the pipe.

PRESSURE TESTING

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

1. Before backfilling, the pipe shall be filled with water and tested at design working head or a minimum head of 10 feet, whichever is greater. All leaks shall be repaired and the test repeated before backfilling starts.

2. Pressure test at the working pressure for 2 hours. The allowable leakage shall not be greater than 1 gallon per diameter inch per mile. If leakage 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

Backfilling shall be completed before the line is placed in service. For plastic pipe, the initial backfill shall be of selected material, free from rocks or other sharp-edged material that would damage the pipe. This initial fill should he compacted around the pipe to a density at least equal to the natural density of the trench sidewalls. Deformation or displacement of the pipe must not occur during backfilling.

Backfill of plastic pipe should be done after the pipe reaches the same temperature as the water or soil. This may be done by filling the pipeline with water or by leaving the trench open overnight before backfilling.

Plastic pipelines installed by the plow-in method require surface compaction and shaping in addition to the normal plow-on operations.

Installation and backfilling shall be done in a workmanlike manner. Provisions shall be made for stabilizing disturbed areas and controlling erosion, as necessary.