

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

DRY HYDRANT

1. Scope

The work shall consist of excavation and installation of the dry hydrant along with other materials and fixtures as shown on the construction plans.

2. Location

The installation shall be as shown on the construction plans and as staked in the field.

3. Site Preparation

All loose rock, sediment, logs, and vegetation that can obstruct the free discharge from the water body shall be removed and disposed of so they will not endanger the dry hydrant.

4. Installation

Pipe shall be installed at a sufficient depth below the ground surface to provide protection from hazards imposed by traffic crossing, farming operations, freezing temperatures, or soil cracking. The minimum depth of cover shall be 2.5 feet; but in soils subject to deep cracking, the cover shall be a minimum of 3 feet.

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 2 feet.

At low places on the ground surface, extra fill may be placed over the pipe to provide the minimum depth of cover. The fill material shall be placed and compacted before the trench is excavated. If extra protection is needed at vehicular crossings, encasement pipe or other approved methods may be used.

The trench at any point below the pipe shall be only wide enough to permit the pipe to be easily placed and joined. The width of the trench shall allow the initial backfill material to be uniformly packed around and along the sides of the pipe. The maximum trench width shall be 2.5 feet greater than the diameter of the pipe. If the trench is precision excavated and has a semicircular bottom that closely fits the pipe, the width shall not exceed the outside diameter of the pipe by more than 10 percent.

The trench bottom shall be uniform so that the pipe lies on the bottom without bridging. Clods, rocks, and uneven spots that can damage the pipe or cause non-uniform support shall be removed.

If there are rocks, boulders, or any other material that might damage the pipe, the trench bottom shall be cut a minimum of 1/3 foot below final grade and filled with bedding material consisting of sand or compacted fine-grained soils.

Care shall be taken to prevent permanent distortion and damage when handling the pipe during unusually warm or cold weather. The pipe temperature shall be at or near the soil temperature before backfilling. 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.

All joints and connections shall be capable of withstanding the design maximum working pressure for the pipeline without leakage. Pipe joints shall leave the inside of the pipeline free of any obstructions that can reduce its capacity below design requirements.

All fittings such as couplings, reducers, and bends shall be installed according to the recommendations of the pipe manufacturer.

All exposed polyvinyl chloride (PVC) or metal surfaces and all underground metal surfaces should be adequately treated to prevent deterioration of the material.

Thrust blocks should be considered at the elbow joint, both to resist hydraulic forces and to steady the installation in unstable soils. When required, thrust blocks must be formed against solid, unexcavated earth that is undamaged by mechanical equipment. They shall be constructed of concrete, and the space between the pipe and the trench wall shall be filled with concrete to the height of the outside diameter of the pipe or as specified by the manufacturer.

If it is necessary to partially backfill the line before testing to hold the pipeline in place, backfilling shall be such that all joints and connections shall be left uncovered for inspection--only the body of the pipe sections shall be covered.

It shall be demonstrated by testing that the system will function properly at design capacity. At or below design capacity, there shall be no objectionable flow conditions such as water hammer, continuing unsteady delivery of water, damage to the system, or discharge detrimental to the tankers.

The initial backfill material shall be selected soil or sand that is free from rocks or stones larger than 1 inch in diameter and earth clods greater than 2 inches in diameter. The material shall be placed so that the pipe will not be displaced, exclusively deformed, or damaged.

Water packing shall be used when possible to consolidate the initial backfill around the pipe. The initial backfill, before wetting, shall be of sufficient depth to ensure complete coverage of the pipe after consolidation occurs. Water packing is accomplished by adding enough water to saturate the initial backfill thoroughly. If conditions do not permit water packing, the initial backfill shall be placed in layers and compacted around and above the pipe to a depth of ½ foot by hand or mechanical methods.

Final backfill material shall be free of large rocks, frozen clods, and other debris greater than 3 inches in diameter. The material shall be placed and spread in uniform lifts so that there will be no unfilled spaces in the backfill. The finished backfill will be level with the natural ground or at the design grade required to provide the minimum depth of cover after settlement takes place.

All special backfilling recommendations of the pipe manufacturer shall be met.

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

If requested by the state conservation engineer, the manufacturer shall certify that the material meets the requirements specified in this standard.

All construction shall be performed in a workmanlike manner, and the job site shall have a neat appearance when finished.

5. Material

All backfill material, pipe, and fixtures shall conform to the requirements listed on the plans.

6. Construction Details