NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE GENERAL SPECIFICATIONS

DRY HYDRANT

(Each)

CODE 432

GENERAL SPECIFICATIONS

Dry hydrant installations shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification.

The work shall consist of furnishing materials and installing all components of a dry hydrant, as outlined in this specification and as shown on the drawings. Installation includes all clearing, excavation, grading and shaping, backfill placement, and installation of hydrant pipe, connection and screen to the lines, grades, and elevations as specified on the drawings or staked in the field.

CONSTRUCTION SPECIFICATIONS

Site preparation

The dry hydrant access area and pipe location shall be cleared to the extent needed for pipe installation and access by firefighting personnel and equipment. Clearing and brush removal for safe line-of-sight to the road shall be included. Cleared debris, logs, stumps, and other trash shall be burned, buried, removed from the site, or otherwise disposed of in accordance with state and local laws in a manner that does not interfere with hydrant installation or vehicle access. Any fence encountered within the construction area shall be carefully dismantled and laid back for later reconnection and relocation. The site shall be shaped to facilitate easy on/off road access. The finished site condition shall be nearly level, and well drained to facilitate operation and maintenance activities.

Excavation

Excavation for installation of the hydrant pipe and riser shall be done by trenching or other approved methods. Trenches, having greater than 5 foot cuts, shall be sloped to a stable slope to avoid sidewall caving and to improve backfill compaction. No personnel are allowed in a trench having a depth in excess of 3 feet unless the sides are sloped. Care must be taken during underwater excavation to maintain bottom grade. The bottom grade shall have a positive slope towards the water source.

Excavation and shaping that will facilitate and enhance easy on/off road access to the dry hydrant shall be done in a workmanlike manner. Such excavation and shaping shall provide a nearly level, well drained site which will also facilitate operation and maintenance activities.

Pipe

The pipe conduit complete with fittings and other related appurtenances shall be installed to the lines and grades shown on the drawings or as specified in this specification. The pipe shall be installed so that there is no reversal of grade between joints unless otherwise shown on the drawings. The pipe shall not be dropped or dumped on the bedding or into the pipe trench. The ground surface near the pipe trench shall be free of loose rocks and stones greater than 1 inch in diameter. This ensures that rock will not be displaced and impact the pipe.

The pipe shall be placed in the trench to design elevations and anchored in position. Anchoring may be accomplished by tying pipe to stakes, concreting in place, or by placing rounded pea-size or larger gravel

around the lower pipe elbow. Backfill should start at the pipe riser and proceed toward the water source.

In ponds, the end of the pipe shall be supported at least 2 feet above the pond bottom by using cement blocks, 1-inch diameter galvanized pipe-post and strap, or other permanent supports underneath the pipe. The pipe shall be adequately secured to the support with corrosion resistant material. Screens or strainers may also be covered with 12 inches of crushed rock or gravel.

Fill Placement

If suitable, the material excavated from the pipe trench, access area shaping, or other source may be used for pipe backfill and other filling and shaping activities on the site. The fill material used in the trench must be free from all sod, roots, stones over two inches in diameter, frozen soil, and other objectionable material. Loose, sandy material or pea size gravel should be used as backfill around the pipe below water level to promote drainage and anchoring. Soil placed against plastic pipe shall be free of any isolated stones. Soil placed within 6 inches of the pipe shall be free of stones greater than 2 inches in diameter.

Compaction around the pipe below water level shall start at riser end and proceed downstream to the intake. Compaction will be accomplished by the weight of the soil and compaction of soil materials above the water level. Trench confinement and compaction will be done in a manner that will force excess water from the fill material. Care must be taken so that loose soil in the water will not be pushed out over the intake screen. A minimum of 2 feet of cover over the pipe is required. The soil surface shall be mounded over the pipe for settlement and to divert surface water.

MATERIAL SPECIFICATIONS

All materials shall be new, with manufacturers' warranties, as applicable. Their estimated minimum service life shall be 10 years or more. Pipe materials shall be of the specified type, size, and length as shown on the drawings. Pipe connections shall be properly cleaned and cemented such that all connections are air and water tight.

Minimum size for pipe and fittings shall be 6-inch nominal inside diameter. All PVC components are to be Schedule 40, SDR 26, or stronger. The pipe material for the hydrant system shall conform to the following specifications:

Plastic Pipe	ASTM D1785 (SCH 40) ASTM D2241 (SDR 26)
Fittings	ASTM D2466
Bell Joints	ASTM D2672
Solvent cement	ASTM D2564 – Tetrahydrofurance (THF) primer and between 800-1000 centipoise viscosity cement. (Never use all- purpose cements to join PVC pipe and fittings).

All PVC pipe and fittings exposed to sunlight shall be primed and painted with high grade epoxy paint to provide protection from ultraviolet rays.

Hydrant assembly and connectors acceptable to and approved by the local fire department shall be used.

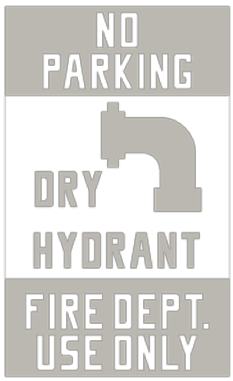
TESTING

Allow pipe joint sealants to cure before testing the piping system. The fire department shall run a pump test at the design capacity to confirm satisfactory operation. Give careful attention to silt, debris, or other interference that may limit the full operation of the hydrant.

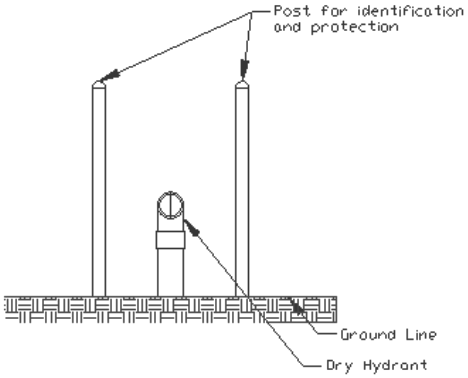
MARKINGS

The dry hydrant shall be clearly marked with appropriate sign(s) acceptable to the fire department. Use of reflective paint on signs and on the quick-connect cap will help improve visibility. Letters and/or numbers should be 3-inches high with ½-inch stroke and be reflective. Physical barriers may be needed to protect

the above ground pipe system. The figures below are examples of signage and protection that can be used.



Example Sign



Typical protection with post for signage

ACCESS

Vehicle access to and from the dry hydrant shall be provided for fire truck and pumper units. Access shall have an all-weather surface acceptable to the fire department. It shall be nearly level and well drained, and be at least 12 feet wide for ease of movement by personnel and equipment during an emergency. When local road traffic is involved, an all-weather road adjacent to the dry hydrant and completely off the public road is recommended for the safety of emergency personnel and the public. The fire truck connection shall be within 10 feet of the edge of an all-weather access road and the fire truck pumper connection shall be higher than the emergency spillway elevation if installed in a constructed impoundment.