

Nevada County Consolidated Fire District
Fire Protection Water Supply Systems
Standard Number 102

This standard establishes the minimum requirements for a fire protection water supply that may be used when a reliable public water supply is not available. Since the fire protection water supply consists of a static water source, such as a reservoir, tank, or other approved storage method, a dry hydrant connection shall be provided for fire department use. A dry hydrant connection is an arrangement of pipe permanently connected to a water source that provides a ready means of accessing a water supply for firefighting purposes and that utilizes the drafting (suction) capability of fire department pumpers.

Following are the general requirements for the installation of the system:

1. Prior to construction of the water supply, plans shall be submitted to the Fire District for review and approval. Plans shall include the method of storing water, approximate volume of stored water, and the type and size of piping to be used. In addition, a site plan shall be provided showing the approximate location of the water storage, hydrant, access roadways, and structures intended to be protected by the water supply.
2. A minimum water supply of 2,500 gallons shall be provided for each single-family dwelling. The system shall be designed so that the water supply is available for use by fire apparatus at a rate of not less than 500 gallons per minute.

When the water supply is intended to protect multiple structures, the minimum amount of water storage is determined by using the formula $Q=100F$. Q is the minimum required water supply, F is the number of structures to be served, and 1500 is a constant. In no case shall the minimum required water supply be less than 4,000 gallons.

3. The dry hydrant shall be readily accessible by fire apparatus and shall be located not less than 50 feet or more than 500 feet from the structure intended to be served by the system.
4. The dry hydrant shall be located within 10 feet of the driveway or other approved access roadway.
 - (a) If the dry hydrant is located along the driveway serving a single structure or along the primary access roadway serving multiple structures, the connection shall be located in such a manner that fire apparatus can utilize the hydrant without obstructing the access roadway.
 - (b) An approved turnout, consisting of a 10-foot wide driving surface with a 25-foot taper on either end (total length of 75 feet), shall be provided when the dry hydrant is placed adjacent to a single lane access roadway or where fire apparatus using the hydrant would obstruct the access roadway.
 - (c) All flammable vegetation within 10 feet of the dry hydrant shall be removed.

5. Piping supplying the dry hydrant shall be not less than 4 inches in diameter.
 - (a) If PVC piping is used, the piping shall be Schedule 40, or better.
 1. Exposed PVC piping shall be primed and painted with epoxy paint or otherwise protected from damage that could be caused by exposure to sunlight in an approved manner.
 2. If PVC piping is used for the dry hydrant, an approved brace or support shall be provided to support the connection.
 - (b) If galvanized steel piping is used, the piping in contact with the soil shall be wrapped with 2 layers of Mil Tape or otherwise protected from corrosion in an approved manner.
6. The connection for the dry hydrant shall consist of a 4-1/2 inch threaded male fitting with National Standard Threads. The connection shall be provided with an approved cap to protect the threads and to protect the water supply from contamination.
7. The connection for the dry hydrant shall be located between 18 inches and 36 inches above the finished grade.
8. If the dry hydrant connection is located lower than the water source, such as a storage tank, an approved valve at the base of the dry hydrant shall be provided to control the water flow.
 - (a) Provisions shall be made to drain any standing water from the piping above the valve.
 - (b) Any exposed piping that contains water shall be protected from freezing in an approved manner.
9. Closed storage tanks shall be vented in an approved manner.
 - (a) Vent piping shall be equal to or larger than, the size of the piping serving the dry hydrant.
 - (b) The vent opening shall be screened with an approved material to prevent obstruction of the vent or contamination of the water supply.
10. When the water supply consists of an open water source such as a lake, reservoir, or pond, the following shall apply:
 - (a) If the distance between the water source and the dry hydrant is greater than 100 feet, a minimum 6-inch piping shall be used to supply the dry hydrant.
 - (b) The piping between the base of the dry hydrant and the water source shall be buried at least 3 feet below the finished grade.

- (c) The end of the piping located in the water source shall be located a minimum of 2 feet above the bottom surface of the water source and a minimum of 2 feet below the lowest recorded level of the top surface of the water source.
 - (d) The end of the piping located in the water source shall be fitted with a commercially manufactured dry hydrant strainer, a hand-made strainer consisting of a capped section of pipe with 1000 holes that are 5/16 inch in diameter drilled along the length, or equal.
 - (e) The distance between the lowest recorded level of the water surface and the connection for the dry hydrant shall not exceed 10 vertical feet.
11. Approved signs indicating the size, location, and access travel route to a fire protection water storage facility shall be provided in such a manner that all pertinent information relating to the facility is clearly identified.
- (a) All signs shall be mounted on noncombustible posts, shall be a minimum of 18" by 24" in size, and shall be a minimum of 0.080 gauge metal.
 - (b) The sign(s) shall have a reflective blue background with a minimum of 3" high reflective lettering that sharply contrasts with the background.
 - (c) If the water supply consists of a fixed amount, such as an underground or aboveground storage tank, the sign shall be located on or adjacent to the facility. The sign shall be clearly visible and legible from the access roadway serving the facility. The lettering on the sign shall be arranged as shown in the following example:

6,000 Gallon
Fire Protection
Water Supply

- (d) If the water storage facility consists of a reservoir, pond, or similar facility, at least one sign shall be provided at the intersection of the primary access roadway serving the area and the access roadway serving the water storage facility. This sign shall be located in such a manner that it is clearly visible and legible from the primary access roadway serving the area. Additional signs shall be provided along the access roadway serving the water storage facility if the route of travel is not easily recognized. The lettering on the sign shall be arranged as shown in the following example:

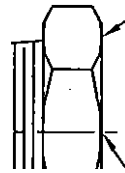
Access to
Fire Protection
Water Supply

NOTE:
 THESE ARE REPRESENTATIONAL ONLY!
 OTHER METHODS MAY BE APPROVED IF THEY PROVIDE THE SAME
 PRACTICAL EFFECT.

HOSE CAP, LUG TYPE \ (MAY BE PLASTIC)
 4 1/2" N.H.



4 1/2" N.H.



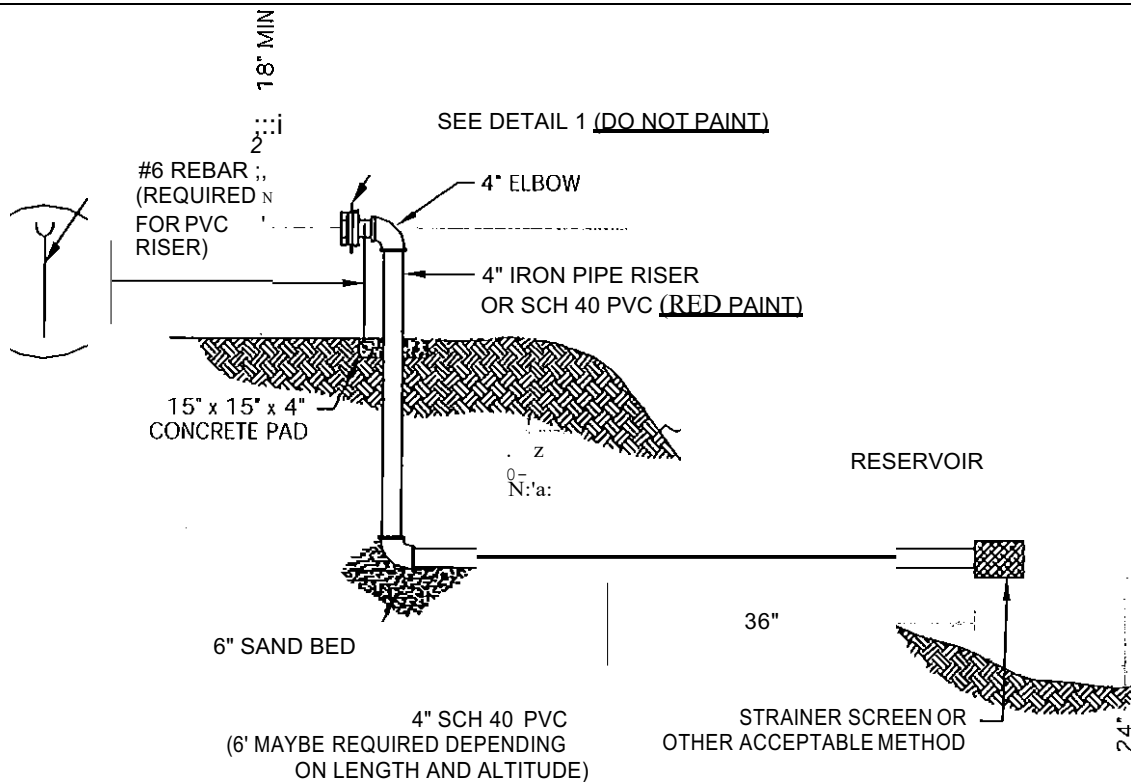
HOSE NIPPLE,
 4" J.P.T. FEMALE
 TO 4 7/8" N.H. MALE
DO NOT PAINT

4" I.P.T.

N.S.T. = NATIONAL STANDARD THREAD

4 1/2" N.H. 1.P.T. = IRON PIPE THREAD

DETAIL 1

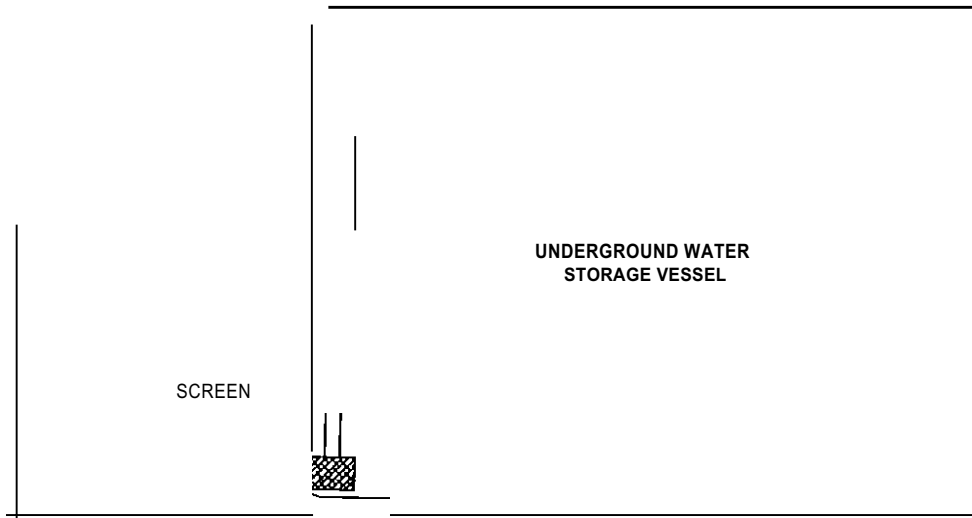
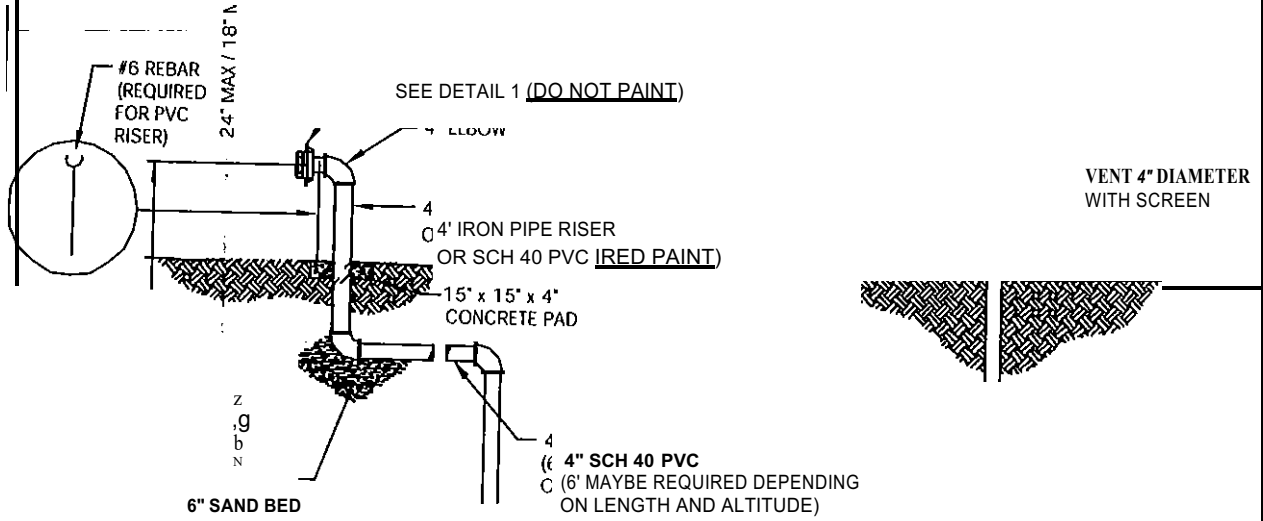


NOTE:
 FIRE DEPARTMENT HOOK-UP IS FOR ALL
 APPARATUS SUCTION HOSE SIZES. BOTH
 WILDLAND AND MUNICIPAL FIRE ENGINES.

EXAMPLE 1

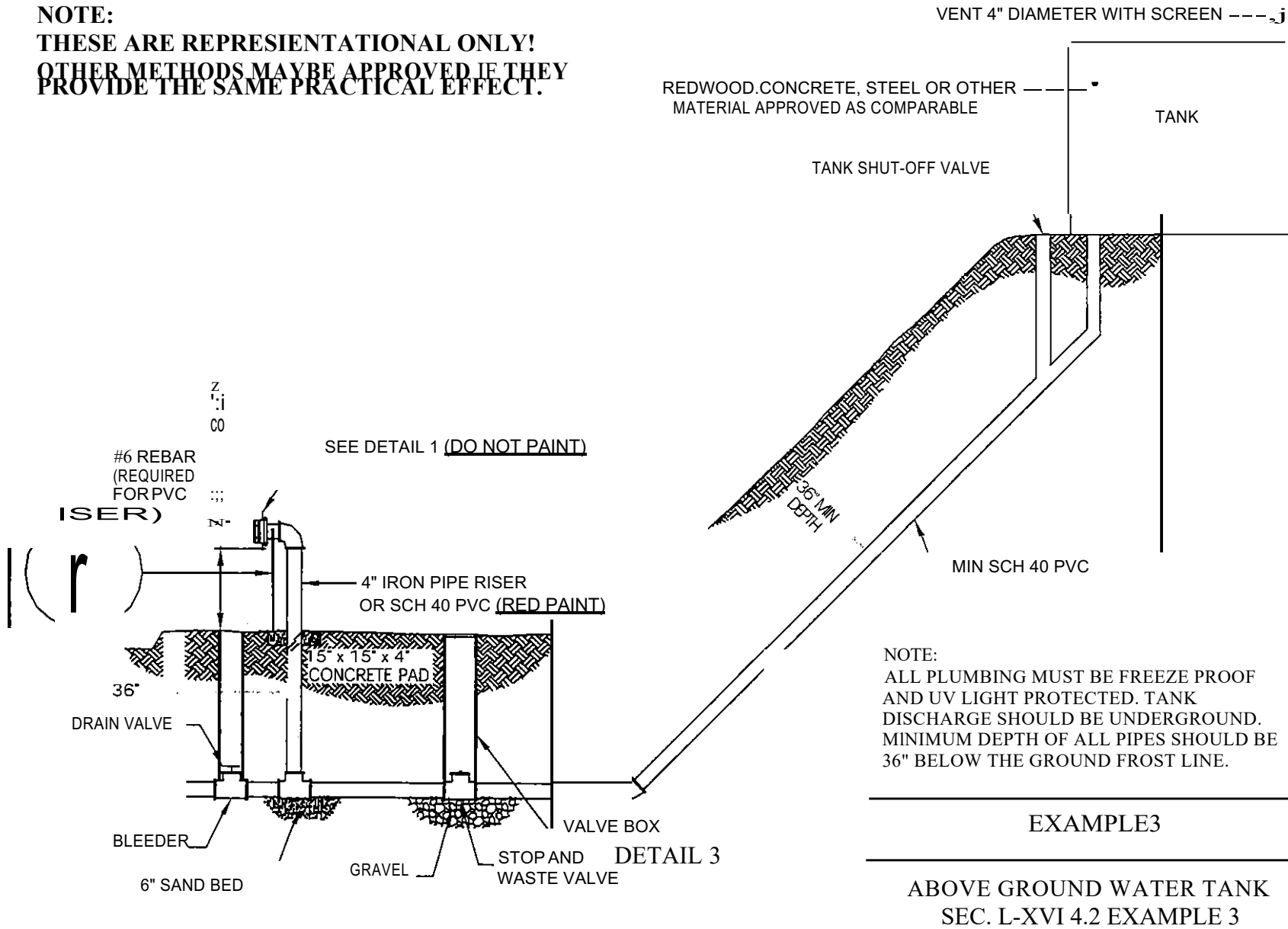
RESERVOIR / LAKE STANDPIPE
 SEC. L-XVI 4.2 EXAMPLE 1

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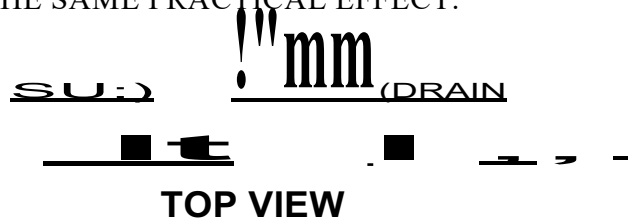


<p><i>NOTE:</i> HYDRANT TO BE LOCATED NOT LESS THAN 50 FEET NOR MORE THAN 1000 FEET FROM THE STRUCTURE TO BE PROTECTED.</p>	<p>EXAMPLE 2</p>
<p>UNDERGROUND TANK STANDPIPE SEC. L-XVI 4.2 EXAMPLE 2</p>	

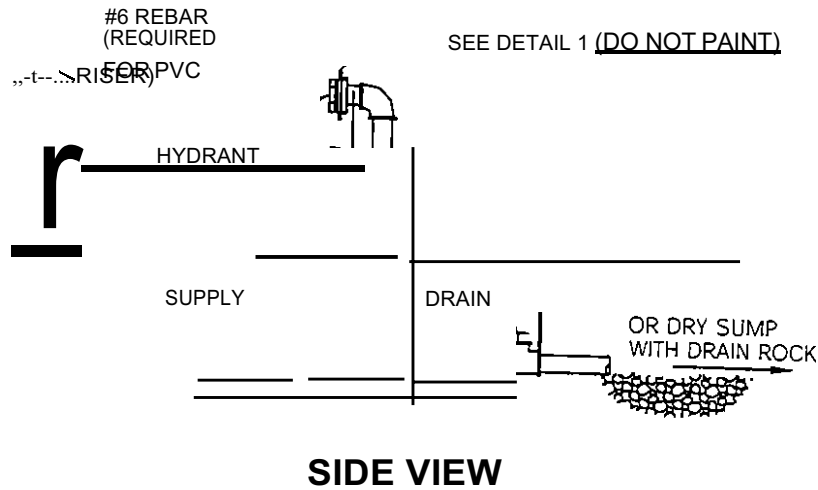
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MANIFOLD



NOTE:
 DUE TO THE DEPTH OF THE VALVES, THE OWNER
 SHALL PROVIDE THE MEANS (E.G. VALVE
 EXTENSION) FOR THE FIRE DEPARTMENT TO
 OPERATE THE VALVES.

EXAMPLE4

SEC. L-XVI 4.2 EXAMPLE 4