



FIRE PREVENTION DIVISION STANDARD DETAILS & SPECIFICATIONS

SUBJECT: Private Fire Protection Water Supply Tanks and Hydrants for Single Family Dwellings	SPEC NO: 11-P EFFECTIVE DATE: 01/01/13 REVISED:
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SCOPE

This Standard applies to the installation of private, residential fire protection water supply systems for fire sprinklers and fire hydrants when a municipal or approved private water system is not available for fire protection.

DEFINITIONS

Fire Flow: The amount of water required for fire department use for fire suppression operations.

Fire Protection Water Supply: Water required for fire suppression hose streams.

Hydrant: A fire hydrant (wharf type) with one 2 1/2-inch outlet.

Piping: Any piping approved for use by the National Installation Standards or by the Fire Prevention Division.

Tank Outlet: An outlet on the tank that allows direct connection to the tank by a fire hose.

Velocity Factor: The speed of water in the pipe in feet per second.

REQUIREMENTS

Required Fire Protection Water Supply

On-site water storage shall be provided in accordance with the table below based on the size of the building. The volumes specified are acceptable only when an approved automatic fire sprinkler system is also installed. If fire sprinklers are not installed, the supply shall be per the calculated fire flow (flow rate and duration) as specified in the Fire Code.

Building Size	Volume of Fire Protection Water Supply
Up to 10,000 sq. ft.	10, 000 Gallons
10,000 sq. ft. – 15,000 sq. ft.	30, 000 Gallons
Over 15,000 sq. ft.	45, 000 Gallons

Water Tanks

A. General

1. Fire protection water supply tank(s) and hydrant locations shall be approved by the Fire Prevention Division. Tanks shall be located to allow gravity flow of water from the tank to the hydrant. A system to automatically fill the tank(s) is required.
2. Underground tanks that require drafting operations will not be allowed.
3. Fire protection water supply tanks of other than steel construction shall not be located closer than 20 feet to any structure. Wood tanks are not allowed.
4. The water supply for both automatic fire sprinklers and domestic use shall be supplied by the same tank(s) to ensure reliability. A system to automatically fill the tank(s) is required.
5. The tank capacity for combined domestic/fire sprinkler systems shall be determined by adding the volume required for the fire sprinkler system to a minimum of 1,000 gallons for domestic use. The volume of the sprinkler demand shall be based on minimum 30-minute flow duration.
6. The volume of fire protection water supply, as set forth in the "Required Water Supply" table, shall be dedicated to fire protection use. Water for other uses, such as irrigation, shall not be combined in the same tank system. The only exception to this is if it can be demonstrated, to the satisfaction of the Fire Prevention Division, that water can be provided to fulfill irrigation needs and the volume required for fire protection water supply can reliably be available at all times.
7. Tank systems providing both the domestic supply and supply to the sprinkler system and/or hydrant may require cross contamination protection. Check with Building Department for specific requirements related to protection of the domestic supply.
8. Check with the Building Department for tank, tank foundation or other permit requirements.

B. Interconnection of Water Tanks

Interconnection of tanks shall be by a minimum pipe size of 4 inches for storage capacity of up to 10,000 gallons maximum and six inches for storage capacity over 10,000 gallons. Piping for tank interconnections shall be steel pipe unless buried. Buried horizontal piping runs may be of an approved plastic pipe.

C. Water Tank Valves

Control valves shall be provided for water tank installations. Valves shall be of the indicating type. The following control valves shall be provided:

1. Hydrant supply piping control valve. This valve located between the tanks and the hydrant shall be placed at location approved by the Fire Prevention Division. However, in no case shall the valve be located less than 6 feet from the centerline of the hydrant.

2. Tank Interconnection Control valves for isolation of tanks.
3. Water Source Control Valves shall be provided to isolate tanks from water fill sources.

Hydrants

A. Hydrant Location

1. Hydrants shall be located as approved by the Fire Prevention Division. In most cases, hydrants shall be located a minimum of 40 feet from buildings and adjacent to roadways/driveways such that the centerline of the hydrant is at least 2 feet (but not more than 8 feet) from the face of the curb or roadway surface. In lieu of a separate hydrant, a tank outlet may be allowed provided that the outlet location, with respect to the structure, is acceptable to the Fire Prevention Division.
2. Hydrants and tank outlets shall be installed such that the center of the hose connection is not less than eighteen (18") inches nor more than thirty (30") inches above the final grade.
3. When required by the Chief, fire hydrants shall be protected by approved bollards, installed per Fire Prevention Division Standards.
4. Fire hydrants shall be painted safety yellow (or equivalent).

B. Hydrant Pressure

Hydrants supplied by tanks shall have positive, static head pressure. Draft hydrants are not permitted.

C. Hydrant Supply Piping

1. Hydrant supply piping shall be a minimum 4 inches in diameter. Hydrant risers and riser elbows shall be steel. All buried supply piping shall be; galvanized steel, coated ductile iron or approved non-metallic pipe.
2. Concrete thrust blocks, sized in accordance with national standards, and shall be provided at all changes in pipe direction.
3. Hydrant supply piping from private water tanks shall be tested @ 50 psi over static pressure for 2 hours.

D. Hydrant Threads

Hydrants shall have National Standard Thread.

E. Hydrant Clearance

A 3-foot clear space shall be maintained around the circumference of fire hydrants.

Plan Submittals and Permits

A. Permits

An installation permit from the Fire Prevention Division is required for private fire protection water supply tanks and hydrants. The installation work shall be performed by a licensed contractor. Permits will be issued only after plan approval. Contact the Fire Prevention Division for details regarding permit applications and fees.

B. Plans Submittal

1. Plans for fire protection water tanks and/or hydrant installations shall be submitted to the Fire Prevention Division for review and approval. The plan shall be drawn to scale and contain the following information:
2. Size, location and type of all water supply tanks.
3. A complete description and diagram of water supply sources such as municipal water lines, wells, tanks, etc.
4. Size, type, and location of all piping: including the class and type and depth of cover.
5. Size, type and location of all control valves.
6. Location of hydrant(s).
7. Manufacturers specification sheets for all equipment including hydrants, tanks and valves.
8. Size, location and type of thrust blocks or anchor points.
9. All materials shall be new or in good physical condition. The Fire Prevention Division reserves the right to disapprove the use of any used materials.

Inspection

Installation Inspection:

1. All underground piping shall be inspected by the Fire Prevention Division prior to covering. Note that a hydrostatic pressure test is required prior to covering.
2. Flow and flush tests, performed in the presence of Fire Prevention Division staff, will also be required prior to final acceptance of the installation.