



## FIRE PREVENTION DIVISION STANDARD DETAILS & SPECIFICATIONS

**SUBJECT:** Installation of Fire Sprinkler Systems in One and Two Family Dwellings

**SPEC NO:** 11-R  
**EFFECTIVE DATE:** 01/01/13  
**REVISED:**

### SCOPE

This standard applies to fire sprinkler system installations in one and two family dwellings where fire sprinkler systems are installed when required by the California Residential Code, in accordance with local ordinances, or as an approved Alternate Method of Compliance to the provisions of the Fire Code.

The system design criteria, as set forth in this Standard is based on total building square footage. Note that all usable spaces such as attached garages, carports, attics used for storage, etc. are included when determining total building square footage.

### DEFINITIONS

Alternate Method of Compliance: An approved method of compliance that, in the opinion of the Fire Department, meets the intent of the provisions outlined in the Fire Code.

NFPA Standard 13D: National Fire Protection Association Standard 13D, Fire Sprinkler Systems in One and Two Family Dwellings and Manufactured Homes

### REQUIREMENTS

#### **I. General**

The sprinkler system design and installation shall comply with provisions of the current State adopted edition of NFPA Standard 13D except as specified in this Standard.

#### **II. Design Criteria**

All plan submittals for the installation of water-based fire suppression systems shall include a report or other documentation from the water purveyor that provides water supply information.\* The information provided shall include the static pressure, residual pressure and gallons per minute (gpm) available in the vicinity of the project.

The available pressure provided by the water purveyor shall be reduced by 10% for the system demand calculations. Note: If the test methodology of the water purveyor already includes a 10% reduction, no additional reduction is required (the reduction provided by the water purveyor must be so indicated on the provided water supply information).

### III. Water Supply

1. The water supply source for the fire sprinkler system shall be from the same source as the domestic supply unless otherwise approved by the Fire Prevention Division.
2. When water tanks are approved to supply fire sprinklers, both the domestic and fire protection water storage shall be combined in one tank or tanks to ensure reliability.
3. Water supply tanks shall be sized to provide the fire sprinkler system with a flow duration of not less than 30 minutes. See Standard Detail # 11-P for tank requirements.
4. When pumps are used for water supply/pressure to sprinkler systems, the pump specifications (pump rating, flow curve, etc.) shall be included with the plans submittal.
5. Where a water supply serves both domestic and fire sprinkler systems, 5 gpm shall be added to the sprinkler system demand at the point where the systems are connected, to determine the size of common piping and the size of the total water supply requirements where no provision is made to prevent flow into the domestic water system upon operation of a sprinkler.
6. Back flow prevention devices may be required by the local water purveyor. If such devices are required, the system demand calculations shall include losses for the device specified by the water purveyor.

### IV. Number of Design Sprinklers

1. For buildings up to 3600 square feet, the number of design sprinklers shall be in accordance with NFPA Standard 13D.
2. For buildings 3601 to 6200 square feet, the number of design sprinklers shall include all sprinklers within the most remote room or compartment up to a maximum of three (3) sprinklers.

Note: If the most remote room or area contains less than three (3) sprinklers, the number of design sprinklers shall include all of the heads within the room. In addition, calculations shall be provided that demonstrate the operation of 3 sprinklers in the most remote room that requires three (3) or more heads for coverage.

3. For buildings in excess of 6200 square feet, the (4) four most hydraulically demanding heads in a room or compartment shall be calculated.

### V. Location of Sprinklers

The exceptions listed for the locations of sprinklers as per NFPA Standard 13D shall be applicable except as follows:

1. Fire sprinklers shall be provided in any attached garage, carport, basement, foyer(s) or area below decks used for storage or other purposes.

2. Roof attic areas not intended for storage or other uses, a single pilot head shall be provided in the attic space above each attic access door or hatch. In addition, pilot sprinkler protection shall be provided for any mechanical equipment installed in attics including, but not limited to, furnaces and water heaters. Note: Approved CPVC fire sprinkler pipe will be allowed to supply attic heads required by this section. Freeze protection for piping shall be provided as necessary.
3. Roof attic areas intended for storage or other uses with an access door/hatch greater than 22 x 30 shall be provided with a complete fire sprinkler system.
4. Sprinkler protection shall be provided for usable areas under exterior building or roof overhangs, such as patios and porches that extend more than 4 feet from exterior walls.  
  
**Exception:** Overhangs over building entrances that do not exceed 12 feet in length or width.
5. Small closet spaces that contain furnaces, water heaters or other mechanical equipment shall be provided with sprinkler protection regardless of the size of the space.

## VI. Fire Department Connection

For buildings in excess of 6200 square feet, a Fire Department Connection (FDC) shall be provided. The FDC shall consist of at least one 2.5" hose connection that is connected to the sprinkler riser with a pipe **not less** than the diameter of the sprinkler riser.

1. The location of the FDC shall be as approved by the Fire Prevention Division utilizing the following criteria:
2. The FDC shall be located on an exterior wall of the residence, a minimum of 10 feet from any door or window opening. The distance to openings may be decreased to not less than 5 feet if the FDC is located on an adjacent wall that is more than 180 degrees to the wall that the opening is located on.
3. The FDC shall be readily accessible from the street or access driveway.
4. The FDC shall not be located behind fences or gates such that it is not visible from the front of the residence.
5. The FDC shall be painted safety yellow and be identified with a sign that states "Fire Department Connection". The lettering on the sign shall be at least one inch high.

## VII. Alarms

Exterior audible water flow alarms shall be provided. Additionally, water flow shall activate either a separate interior audible device that can be heard in all sleeping areas or, through interconnection with the smoke detectors, which will sound an alarm in the sleeping areas.

## VIII. Control Valves

Valves controlling the water supply to residential fire sprinkler systems shall be installed in accordance with NFPA Standard #13D and be distinguishable, accessible, and located adjacent to the structure, proximal to the domestic shut off valve. The main system control valve shall be distinguishable from the domestic valve by means of a permanently attached tag and be of contrasting color (i.e.: red handle for main system, versus black handle for the domestic supply).

