

## STANDARD DETAILS & SPECIFICATIONS

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

Spec. No.: CFMO-SP6  
Rev. Date: 2/28/2008  
Eff. Date: 04/02/2004  
Approved By: J. Saunders  
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### SCOPE

This standard applies to dwellings (as classified by the California Building Code) where fire sprinkler systems are installed as an approved Alternate Method of Compliance to the provisions of the California Fire Code or Fire Marshal Standards. The installation of fire sprinklers in manufactured homes is regulated by California Department of Housing and Community Development, however on-site installation, sprinkler system connection to the water supply, and the system extension to any attached structure is regulated by this office.

### DEFINITIONS

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

NFPA 13D: National Fire Protection Association Standard 13D, *Installation of Sprinkler Systems in One-and Two-Family Dwellings and Manufactured Homes*, adopted edition.

Manufactured Home: As defined by California Health and Safety Code Section 18007 ; "... a structure, transportable in one or more sections, which, in the traveling mode, is eight body ft. or more in width, or 40 body ft. or more in length, or, when erected onsite, is 320 or more square feet, and which is built on a permanent chassis and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities, and includes the plumbing, heating, air conditioning, and electrical systems contained therein. Manufactured home includes a mobilehome subject to the National Manufactured Housing Construction and Safety Act of 1974."

### REQUIREMENTS

#### I GENERAL REQUIREMENTS

- A) The sprinkler system design and installation shall comply with provisions of the adopted edition of NFPA Standard 13D except as specified in this Standard.
- B) 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, covered porches and patios are included when determining total building square footage.

#### II SPECIFIC REQUIREMENTS

- A) 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.

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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 requiring three (3) or more heads for coverage.

3. For buildings in excess of 6,200 square feet, the four (4) most hydraulically demanding heads in a room or compartment shall be calculated.

B) 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. For 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 shall be provided with complete fire sprinkler protection throughout.
4. Sprinkler protection shall be provided under exterior building or roof overhangs extending more than four (4) feet from exterior walls.  
**Exception:** Overhangs over main building entrances that do not exceed 12 feet in length.
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.

C) Piping:

All piping used in the sprinkler system shall meet the requirements of NFPA Standard 13D and be approved by the California Plumbing Code for domestic use (i.e.; copper, plastic, galvanized, etc.). If piping is compatible, only a rubber-faced, single check valve is required between a residential fire sprinkler system and domestic water supply by the Building Inspection Office, unless a Fire Department Connection (FDC) is installed.

D) Water Supply:

It is the applicant's responsibility to provide water supply information (water source, available supply calculations or a letter from the water purveyor, pump specifications, etc.) as part of the sprinkler submittal for purposes of showing that the water supply is adequate to supply the calculated system demand.

E) Fire Department Connection: For buildings in excess of 6,200 square feet, a fire department connection (FDC) shall be provided. The FDC shall consist of at least one 2.5-inch NHT female hose connection that is connected to the sprinkler riser with a pipe not less than the diameter of the sprinkler riser.

The location of the FDC shall be as approved by the Fire Marshal's Office utilizing the following criteria:

1. The FDC may 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.
2. The FDC shall be readily and accessible from the street or driveway.
3. The FDC shall not be located behind fences, walls, vegetation, etc. such that it is not visible from the front of the residence.
4. The FDC shall be identified with a sign that states "Fire Department Connection." The lettering on the sign shall be at least one inch high.

**NOTE:** When the Building Department or local water purveyor requires a backflow prevention device, it shall be approved and listed for fire service.

F) Alarms And Monitoring:

1. 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, will sound an alarm in the sleeping areas to achieved the required audibility.
2. Water flow switches and control valves shall be electrically monitored when the system includes 100 or more sprinklers. Valve monitoring, water-flow alarm and trouble signals shall be automatically transmitted to an approved central or remote station monitoring service.

G) Control Valves:

Main supply valves controlling the water supply to residential fire sprinkler systems shall be installed in accordance with NFPA Standard 13D, and shall 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).

**NOTE:** See *Figure 1*, " Residential Fire Sprinkler System Control Valve Diagram " on page 6 for details.

#### H) Manufactured Homes

1. The California Department of Housing and Community Development (HCD) is the Authority Having Jurisdiction for the issuance of the permit for the installation of the sprinkler system within the modular envelope of a manufactured home whether the system is factory installed or retrofitted on-site.
2. The County Fire Marshal's Office requires a permit for the connection of the sprinkler system to its water supply, and will conduct a pressure test and final inspection, typically at the same time.
3. Any attached structures built onto a sprinklered manufactured home (e.g.: an attached garage) will also require the installation of a complying NFPA Standard 13D system as modified by this standard, and a permit shall be obtained from the County Fire Marshal's Office.
4. **ON-SITE INSPECTION:** The County Fire Marshal's Office shall conduct all inspections required as a condition of our permit in any manufactured home and/or attached structure. The final inspection shall include the following:
  - a. Inspection of the system connection to the water source. The hydrant shall also be opened to determine adequacy of flow.
  - b. Pressure test under available pressure only as required by Title-25 CCR, Chapter 3, Subchapter 2, Section 4320. **NOTE:** sprinkler systems in attached structures shall be tested at 200 psi for 2 hours as required by NFPA Standard 13D.
  - c. An audibility test of the alarm. All doors and windows must be closed during this test (see "B. Alarms", above).
  - d. Final inspection.

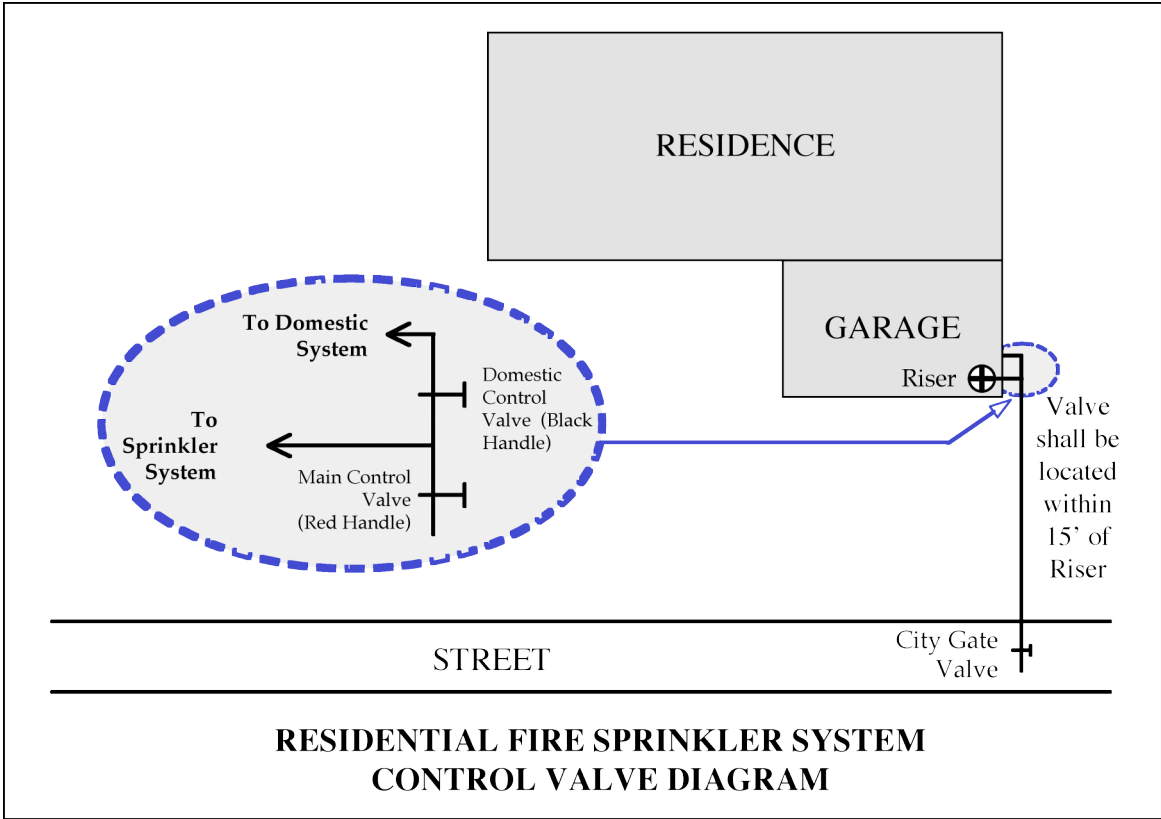


Figure 1