




## FIRE DEPARTMENT SANTA CLARA COUNTY

14700 Winchester Blvd., Los Gatos, CA 95032-1818  
(408) 378-4010 • (408) 378-9342 (fax) • www.sccfd.org



<b>STANDARD DETAILS &amp; SPECIFICATIONS</b>	Spec No	SP-6
	Rev. Date	01/23/15
SUBJECT: Installation of Fire Sprinkler System in one and two family Dwellings and Manufactured Homes	Eff. Date	02/05/04
	Approved By	
	Page	1
	of	6

### SCOPE

This standard applies to the installation of a fire sprinkler system in one and two family dwellings, whether required by the California Residential Code (CRC section 313), local ordinance, or as an approved Alternate Method of Compliance thereto.

For purposes of this standard, "Building Area" shall include all usable portions of the building, in square feet, which shall include attached garages, carports, porte-cocheres, storage areas, etc.

### DEFINITIONS

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

NFPA Standard 13D: National Fire Protection Association Standard 13D, Standard for the installation of Sprinkler Systems in One and Two Family Dwellings and Manufactured Homes. Including all California Fire Code amendments, thereto.

Wildland Urban Interface Fire Area (WUI): A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code, Sections 4201 through 4204, and Government Code, Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

California Residential Code: California Code of Regulations, Title 24, Part 2.5; Based on the International Residential Code

### REQUIREMENTS

#### I. General

Design and installation of a fire sprinkler system in one and two family dwellings shall be in accordance with the California adopted editions of NFPA Standard 13D, or section R313 of the California Residential Code; except as otherwise specified by this Standard.

## II. Design Criteria

### A. 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 Department.
2. Water storage systems (tank or tanks) supplying fire sprinklers shall be combined with domestic water storage, and sized for the aggregate required volume (flow rate times duration) of both demands.
3. Where stored water is used as the sole source of supply the minimum quantity shall equal the water demand rate times 10 minutes. Minimum domestic water storage shall be in accordance with Environmental Health Department requirements. See Standard Detail W-1 for tank requirements.
4. When a pump/pumps are used to supply the sprinkler system, a complete set of manufacturer's data sheets, horsepower, voltage, and flow/pressure curve shall be included with the plan submittal.
5. Where a water supply serves both the domestic and fire sprinkler system, 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, or Plumbing Code Authority. If, such devices are required, the system demand calculations shall include losses for the proposed device. Manufacturer's data sheets for the device shall be included with the plan submittal.

### B. Number of Design Sprinklers

1. For buildings up to 10,000 square feet, the number of design sprinklers shall be in accordance with NFPA Standard 13D and the California Residential Code.
2. For buildings in excess of 10,000 square feet, the number of design sprinklers shall include a maximum of four (4) sprinklers in the most hydraulically demanding area.

### C. Location of Sprinklers

1. Fire sprinklers shall be installed in all locations specified by NFPA 13D or the California Residential Code, including omissions thereto, except as follows:

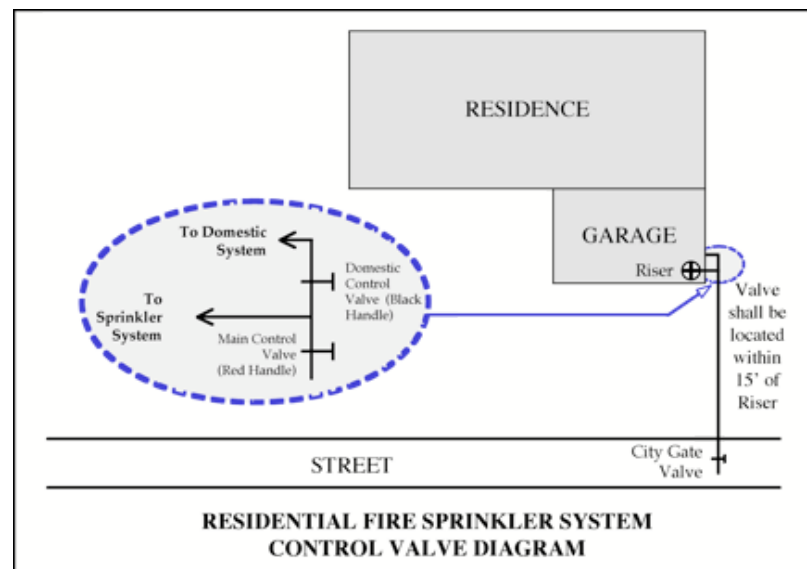
- a. Fire sprinklers shall be installed in all attached garages, carports, basements and areas used for storage or other habitable spaces.
- b. Attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment.

#### D. Alarms

1. An interior and exterior audible water flow alarm shall be provided. The interior bell/horn shall be audible throughout all sleeping rooms. The exterior alarm bell/horn shall be located on the street side of the house, or in an approved location that will be audible from the street or access driveway. A sign shall be provided at the exterior alarm to indicate sprinkler water flow.

#### E. Valves

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



2. Test Valve: The sprinkler test assembly shall contain an orifice equal to or smaller than the smallest sprinkler installed in the system.
3. Drain Valve: Each sprinkler system riser shall be equipped with a minimum ½" drain valve. The valve shall be piped to the building exterior, or to a drain capable of discharging full system flow for a minimum of 90 seconds. A combination test/drain valve may be used if meeting the criteria for both.

4. Main Shut Off Valve: The main shutoff valve shall include a sign or valve tag stating the following: "Warning, the water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shut off the water to the fire sprinkler system, such as water softeners, filtration systems and automatic shutoff valves, shall not be added to this system without a review of the fire sprinkler system by the Fire Code Authority. Do not remove this sign."

### **III. Plan Submittal, Approval, and Inspection**

#### **A. Plan Submittals shall include the following information:**

1. Water supply flow test data, on water purveyor's letterhead. The report shall clearly identify available static pressure, available flow and residual pressure. For private tank systems, pump data or verification of tank and house elevations shall be provided.
2. An approved building site plan clearly identifying location of the water supply connection, water meter, or tank and pump. The site plan shall also identify water supply pipe routing and size to the residence.
3. Three (3) sets of plans and hydraulic calculations meeting the design and plan requirements of this standard. Hydraulic calculations for the system shall prove the water supply is capable of meeting the sprinkler demand with a minimum 10% safety factor (i.e. the available supply pressure, at demand flow, shall be not be less than 1.10 times the sprinkler demand pressure).
4. A set of manufacturer's product data sheets shall be provided for each type of fire sprinkler, piping, hanger, tank, pump, water meter, valve, riser assembly, flow switch, bell/horn, backflow prevention, and other components required for a complete, functional system.
5. A completed Permit Application.
6. Payment of Fees. Please remit payment at the time of submittal.

#### **B. Approved Plans:**

1. One (1) copy of the approved plans and supplemental documents will be retained for reference and field inspection purposes. The balance of submitted plans will be stamped and returned to the applicant with an installation permit.
2. The installation permit entitles the applicant to one (1) hydrostatic/overhead piping inspection and one (1) final system inspection.
3. The installer is responsible to pre-test and verify proper installation of the system prior to scheduling a field inspection. Additional fees may be charged for repeat inspections, due to incomplete or negligent installation.

### **C. Inspection Requirements:**

1. The stamped, approved plans and installation permit shall remain on site until the job is complete and a final is given.
2. A hydrostatic pressure test shall be performed and witnessed by the Fire Code Authority. The system shall be pressurized to the pressure specified below for two (2) hours prior to the scheduled inspection time. All piping shall remain exposed, for visual inspection and hydrostatic testing.
3. System shall be tested at 50 psi over maximum anticipated static pressure and shall maintain the required test pressure, without loss, for 2 hours.
4. A final inspection shall include a functional test of the water flow switch, operation of the exterior bell and an inspection of all interior sprinklers, control valves, water meter, pump test and tank refill function (if applicable).
5. Failure to comply with the Inspection Requirements may result in the inspection being canceled, and a re-inspection fee charged. Inspections required beyond the two (2) included in the permit fee are billed separately. All inspections shall be scheduled at least 48 hours in advance. Please call the Fire Prevention Office at 408-378-4010 to schedule all inspections, and reference your permit number when calling.

### **IV. Plan Submittal Checklist:**

#### **A. The following list is provided to assist the applicant in preparation of a complete sprinkler permit submittal. Failure to provide the required information will delay the plan review process.**

1. A complete set of piping plans, drawn to scale, showing all fire sprinkler locations (use walls as dimensional reference) and room descriptions. Include elevation details to show sprinklers installed in areas with sloped ceilings, soffits, and other architectural features to clarify proper coverage.
2. Indicate the type of piping being used in all areas; include size and length (system piping, riser piping and underground piping).
3. Clearly identify all sloped or unique ceiling elements, including soffits, ceiling pockets, exposed beams, etc. For sloped ceilings, identify the pitch of the slope (i.e. Slope - 4:12).
4. Note all ceiling mounted obstructions that may affect sprinkler discharge such as ceiling fans and lighting fixtures.
5. Indicate on the plans all heat producing zones (fireplace, range, woodstove, furnace, etc.)
6. Specify the manufacturer of each sprinkler model, orifice size, K-factor, and temperature rating. Provide a sprinkler legend to clearly identify location and number of each type of sprinkler used in the system.

7. Provide hanger details showing all components and methods of attachment to building structure.
8. Provide a system riser detail showing all valves, drains and system components.
9. Show proposed location of the exterior bell/horn.
10. Provide site plan, showing the underground pipe size and length, location and size of the water meter, back flow preventer (if required) and connection to the water supply source. Include manufacturer's specification sheets for the water meter and/or back flow preventer, depicting friction loss graphs.
11. Provide a written copy of the water flow data from the water purveyor, indicating the date and location of where it was taken. Water flow data must have been taken within the past 12 months.
12. Indicate all hydraulic reference points on the plans.
13. Provide a building cross section showing sprinkler system components and building construction to clarify installation features.
14. Provide all necessary information and details so a comprehensive plan review may be performed.