## Fire Sprinklers Code and References for the 2010 California Residential Building Code

The following links and code sections are only parts of the 2010 California Residential Building Code Section R313 Automatic Fire Sprinkler Systems. Refer to the complete code sections before making any decisions about a fire sprinkler system.

http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par001.htm R313.2 One- and two-family dwellings automatic fire systems. An automatic residential fire sprinkler system shall be installed in one- and two- family dwellings.

**Exception:** An automatic residential fire sprinkler system shall not be required for *additions* or *alterations* to existing buildings that are not already provided with an automatic residential sprinkler system.

http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par002.htm **R313.2.1 Design and installation.** Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section *R313.3* or NFPA 13D.

http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par003.htm *R313.3* **Dwelling unit fire sprinkler systems.** 

R313.3.1 General. Where installed, residential fire sprinkler systems, or portions thereof, shall be in accordance with NFPA 13D or Section R313.3, which shall be considered equivalent to NFPA 13D. Section R313.3 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall supply domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system. A backflow flow preventer shall not be required to separate a stand-alone sprinkler system from the water distribution system.

http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par004.htm

\*\*R313.3.1.1\*\* Required sprinkler locations. Sprinklers shall be installed to protect all areas of a dwelling unit.

## **Exceptions:**

- 1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In *attics*, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
- 2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m<sup>2</sup>) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.
- 3. Bathrooms not more than 55 square feet (5.1m2) in area.
- 4. *Detached* garages; carports *with no habitable space above; open attached* porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par005.htm

  \*\*R313.3.2 Sprinklers\*. Sprinklers shall be new listed residential sprinklers and shall be installed in accordance with the sprinkler manufacturer's installation instructions.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par010.htm

  \*\*R313.3.2.4.1\*\* Coverage area limit.\* The area of coverage of a single sprinkler shall not exceed 400 square feet (37 m²) and shall be based on the sprinkler listing and the sprinkler manufacturer's installation instructions.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par011.htm

  R313.3.2.4.2 Obstructions to coverage. Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Sprinkler separation from obstructions shall comply with the minimum distances specified in the sprinkler manufacturer's instructions, and/or the provisions of NFPA 13D.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par012.htm

  \*\*R313.3.2.4.2.1\*\* Additional requirements for pendent sprinklers. Pendent sprinklers within 3 feet (915 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par015.htm *R313.3.2.6* Sprinkler modifications prohibited. Painting, caulking or modifying of sprinklers shall be prohibited. Sprinklers that have been painted, caulked, modified or damaged shall be replaced with new sprinklers.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par019.htm

  \*\*R313.3.3.2 Shutoff valves prohibited.\*\* With the exception of shutoff valves for the entire water distribution system, valves shall not be installed in any location where the valve would isolate piping serving one or more sprinklers.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par020.htm *R313.3.3.3* **Single dwelling limit.** Piping beyond the service valve located at the beginning of the water distribution system shall not serve more than one *dwelling*.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par021.htm *R313.3.3.4* Drain. A means to drain the sprinkler system shall be provided on the system side of the water distribution shutoff valve.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par022.htm *R313.3.4* **Determining system design flow.** The flow for sizing the sprinkler piping system shall be based on the flow rating of each sprinkler in accordance with Section *R313.3.4.1* and the calculation in accordance with Section *R313.3.4.2*.

- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par025.htm
  - R313.3.5 Water supply. The water supply shall provide not less than the required design flow rate for sprinklers in accordance with Section R313.3.4.2 at a pressure not less than that used to comply with Section R313.3.6. Where a water supply serves both domestic and fire sprinkler systems, 5 gpm (19 L/min) 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.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par026.htm

  R313.3.5.1 Water supply from individual sources. Where a dwelling unit water supply is from a tank system, a private well system, a pump, or a combination of these, the available water supply shall be based on the minimum pressure control setting for the pump.
- http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par027.htm *R313.3.5.2* Required capacity. The water supply shall have the capacity to provide the required design flow rate for sprinklers for a period of time as follows:
  - 1. 7 minutes for dwelling units one story in height and less than 2,000 square feet (186 m<sup>2</sup>) in area. For the purpose of determining the area of the dwelling unit, the area of attached garages and attached open carports, porches, balconies and patios shall not be included.
  - 2. 10 minutes for dwelling units two or more stories in height or equal to or greater than 2,000 square feet (186 m²) in area. For the purpose of determining the area of the dwelling unit, the area of attached garages and attached open carports, porches, balconies, and patios shall not be included.

Where a well system, a water supply tank system, a pump, or a combination thereof, is used, the water supply shall serve both domestic and fire sprinkler systems. Any combination of well capacity and tank storage shall be permitted to meet the capacity requirement.

http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par033.htm
R313.3.7 Instructions and signs. An owner's manual for the fire sprinkler system shall be provided to the owner. A sign or valve tag shall be installed at the main shutoff valve to the water distribution system 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 a fire protection specialist. Do not remove this sign."

## http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par035.htm

**R313.3.8.1 Preconcealment inspection.** The following items shall be verified prior to the concealment of any sprinkler system piping:

- 1. Sprinklers are installed in all areas as required by Section *R313.3.1.1*.
- 2. Where sprinkler water spray patterns are obstructed by construction features, luminaires or ceiling fans, additional sprinklers are installed as required by Section *R313.3.2.4.2*.
- 3. Sprinklers are the correct temperature rating and are installed at or beyond the required separation distances from heat sources as required by Sections *R313.3.2.1* and *R313.3.2.2*.
- 4. The pipe size equals or exceeds the size used in applying Tables R313.3.6.2(4) through R313.3.6.2(9) or, if the piping system was hydraulically calculated in accordance with Section R313.3.6.1, the size used in the hydraulic calculation.
- 5. The pipe length does not exceed the length permitted by Tables *R313.3.6.2(4)* through *R313.3.6.2(9)* or, if the piping system was hydraulically calculated in accordance with Section R313.3.6.1, pipe lengths and fittings do not exceed those used in the hydraulic calculation.
- 6. Nonmetallic piping that conveys water to sprinklers is listed for use with fire sprinklers.
- 7. Piping is supported in accordance with the pipe manufacturer's and sprinkler manufacturer's installation instructions.
- 8. The piping system is tested in accordance with the California Plumbing Code.

## http://publicecodes.citation.com/st/ca/st/b400v10/st ca st b400v10 3 sec014 par036.htm *R313.3.8.2* **Final inspection.** The following items shall be verified upon completion of the system:

- 1. Sprinkler are not painted, damaged or otherwise hindered from operation.
- 2. Where a pump is required to provide water to the system, the pump starts automatically upon system water demand.
- 3. Pressure-reducing valves, water softeners, water filters or other impairments to water flow that were not part of the original design have not been installed.
- 4. The sign or valve tag required by Section *R313.3.7* is installed and the owner's manual for the system is present.