



Residential Sprinkler Plan Submittal Standard

STD-002
Date:1/10/19
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Approved by:
RWM

SCOPE

This Standard provides minimum requirements for the installation or modification of automatic fire sprinkler systems in one and two (duplexes) family dwellings within the jurisdictional boundaries of the San Mateo Consolidated Fire Department.

New and modified systems shall be designed and installed according to the current adopted editions of the California Residential Code (CRC), Section R313 or NFPA 13D as modified by the State of California in Chapter 80 of the California Fire Code (CFC), any applicable local requirements and in compliance with this Standard. Conflicts shall be resolved as per California Fire Code Chapter 1, Division 1, section 1.1.7.

INSTALLATION STANDARDS

Location of Sprinklers

The exceptions listed for the locations of sprinklers as per CRC, Section R313.3.1 and NFPA Standard 13D section 8.3 shall be applicable as follows:

1. Fire sprinklers shall be provided in attached garages, carports, and breezeways. (CFC Chapter 80, NFPA 13D section 8.3.4)
2. Sprinklers shall be installed in any closet used for heating and /or air-conditioning equipment, washers and / or dryers, and water heaters except as allowed in NFPA 13D Section 8.3.8. (NFPA 13D 8.3.9)
3. Where fuel fired equipment is located on or below the same level as occupied areas of the dwelling unit, at least one quick response intermediate temperature sprinkler shall be installed above the equipment or at the wall separating the space with the fuel fired equipment from the occupied space. (NFPA 13D 8.3.5.1.2)
4. CRC Section 313.3.1.2 requires a sprinkler in the attic, crawl space and normally unoccupied concealed spaces that contain fuel fired equipment. This head may be omitted in favor of NFPA 13D requirements.

Design Requirements

1. Residential sprinkler systems shall be designed in accordance with NFPA 13D, 2016 Edition **or** 2016 Edition of the California Residential Code Section 313. Design criteria shall be specified on the cover sheet of the plans.
2. Unless the pipe size is in accordance with the prescriptive pipe sizing method of section 10.4.9, or in accordance with the straight run system in 10.4.3, pipe shall be sized by hydraulic calculations in accordance with the methods described in NFPA 13. (NFPA 13D section 10.4.3)

Residential Sprinkler Plan Submittal Standard

System Acceptance

Failure to comply with the Inspection Requirements will result in the inspection not being completed and a reinspection fee charged.

1. Approved plans, hydraulic calculations, specifications, and any related correspondence by the Fire District shall be available on site during all inspections and tests (CFC 105.4.6).
2. The water meter and backflow prevention device (if installed underground) shall be exposed for inspection and verification of size and model.
3. Where CPVC pipe supplies the fire sprinklers, the system shall be hydrostatically tested with plugs in place -or-
A minimum of 2 heads (as designated by the Fire Inspector in the field) shall be removed and inspected in the presence of the Fire Inspector to ensure heads are installed free from deposits or solvent cement.
4. Where no fire department pumper connection is provided, all piping and attached appurtenances shall be hydrostatically tested at normal system operating pressures +10 psi without evidence of leakage. If an FDC is present, the system shall be tested at 200 psi. (NFPA 13D section 11.2.1).
5. No pipe shall be covered or concealed prior to an overhead piping and hydrostatic test inspection. Any covered and concealed piping shall be made visible for inspection. CFC Section 106.3)
6. Final inspection shall include testing of the water flow alarm. Water flow alarm shall initiate a signal on the building exterior. The appliance shall be a horn /strobe listed for exterior locations. (NFPA 13D section 11.2.3)
7. All patch work around fire sprinkler heads shall be completed prior to Fire final.

APPROVED PLANS AND CALCULATIONS SHALL BE AVAILABLE ON SITE AT THE TIME OF INSPECTION AS PER CFC 105.4.6. FAILURE TO HAVE APPROVED PLANS ON SITE MAY RESULT IN THE CANCELLATION OF THE INSPECTION, AND A REINSPECTION FEE BEING ASSESSED.

SUBMITTAL REQUIREMENTS

Plan Sheets and Specifications

Submit a minimum of three (3) sets of plans including the following: Check off completed items. Failure to provide the required information will result in the delay of your plan review.

1. Floor Plan/Reflected Ceiling Plan including but not limited to
 - Room descriptions
 - Access panels and doors
 - Ceiling fixtures such as fans, light fixtures, and skylights
 - Basements and crawlspaces

Residential Sprinkler Plan Submittal Standard

- Provide manufacturer's specifications, information and details so a comprehensive plan review may be performed
- 2. Provide an elevation/cross section of the home showing the sprinkler system components and building construction
 - Ceiling heights and slopes
 - Beam dimensions
 - Wall openings greater than 8 feet in width. Include lintel heights
NOTE: Rooms with openings with greater than 8 feet shall be considered an extension of adjoining compartments.
 - Depth and height of soffits
 - Wall heights
- 3. Piping plan shall be drawn to a minimum 1/4" scale showing all sprinkler head locations (use walls and structural design elements such as soffits and beams as dimensional reference) and room descriptions
- 4. Indicate the type of piping, sizes and lengths being used in all areas (system piping, riser piping, and underground piping).
- 5. Indicate on the plans all heat producing zones.
- 6. Specify the manufacturer of the sprinkler head, orifice size and temperature rating.
- 7. Provide hanger details showing all components and attachment devices.
- 8. Provide a system riser detail showing all valves and devices (no shut-off devices shall be installed on the system side).
- 9. Show the location of the exterior horn/strobe appliance.
- 10. Provide the site plan, drawn to scale, showing the underground pipe size, location, water meter size, type and model of backflow prevention device and connection point to the city main.

Hydraulic Calculations

Residential fire sprinkler plans submittal shall include three (3) sets of hydraulic calculations including the following items. Check off completed items. Failure to provide the required information will result in the delay of your plan review.

1. Calculations are required for the two most hydraulically demanding heads (unless otherwise required by the Fire District in systems requiring mitigation) **AND** the one most hydraulically demanding head when applicable.
2. Add 5 GPM flow to the calculation for domestic allowance. 5 GPM allowance may be removed when the domestic water supply is equipped with a valve that prevents flow into the domestic water system upon operation of the sprinkler system.
3. Where backflow prevention devices are required by the water purveyor, indicate the specific equivalent piping as a fixed device. If the model is unknown, or if you are unsure that a backflow prevention device will be required, account for a fixed loss of 11 psi.

Residential Sprinkler Plan Submittal Standard

4. Provide water flow data and the source of information. Attach a copy of written water flow information from the water purveyor. Verbal verification is not accepted. (The design contractor is responsible to ensure the accuracy of the water flow information)
5. Provide the size and pressure loss of the water meter. Verify that the size noted in the calculations corresponds with the site plan.
6. Provide the water flow curve graph.
7. Specify the manufacturer of each type of sprinkler head, orifice size and temperature rating on the calculations.
8. When a pump is installed to supply the residential fire sprinkler system, provide manufacturer's specifications, pump curve, and note location and model on the plans.