



RESIDENTIAL FIRE SPRINKLER SYSTEMS Plan Submittal and Inspection Requirements

All residential fire sprinkler systems within the jurisdiction of the San Mateo Fire Department shall meet all the applicable sections of the San Mateo Municipal Code, NFPA 13, 2013 edition and NFPA 13D, 2013 edition. Residential Fire Sprinkler Systems are required for:

1. All new residential structures
2. Any combination of additions, alterations, or repairs to existing structures, affecting more than 50% of the existing floor area

All fire sprinkler systems shall be designed and installed by a California licensed Fire Protection Contractor (C-16). A property owner may design and install the fire sprinkler system in a single-family residence.

1. Submittal Requirements

All residential fire sprinkler system submittals shall include:

- A. Four (4) sets of plans that comply with the Design and Plan Requirements of this standard.
- B. Four (4) sets of hydraulic calculations that comply with the Hydraulic Calculation Requirements of this standard.
- C. Four (4) sets of manufacturers' material information sheets for the sprinkler heads, piping, horn and strobe device, flow switch and hangers.
- D. A completed Permit Application.
- E. Payment of Fees. A plan check fee will be charged for each submittal. Please remit payment at the time of submittal.

NOTE: Failure to provide all of the requested information will result in unnecessary delays in the plan review process.

2. Approval of Plans

- A. The approved permit application entitles the applicant to one (1) hydrostatic/overhead piping inspection and one (1) final fire sprinkler inspection.
- B. It is the installer's responsibility to perform sufficient pre-inspection testing to ensure operational integrity and reliability of the system in order to avoid delays at the time of inspection. Additional fees will be charged for additional inspections.

3. Design Requirements

Design the one and two family dwellings fire sprinkler systems per NFPA 13D, 2013 edition. The garage exception does not apply. The following detailed requirements shall also apply:

- A. Sprinklers are required in all areas of the structure including:
 - 1) Attached garage
 - 2) Attic Spaces (as described below)
 - 3) Crawl Spaces (as described below)
 - 4) Closets (as described below)
 - 5) Under combustible balconies
- B. All heads within the living areas are to be quick or fast response type and listed for residential occupancies.
- C. Sprinklers in the garage shall be spaced at a maximum of 130 square feet per each sprinkler head.
- D. Garages and small enclosures containing heat producing devices (i.e. furnaces, hot water heater, etc.) may be standard type with intermediate temperature rating within the vicinity of the hazard.
- E. A pilot sprinkler head is required in the attic above the attic door. This sprinkler head shall be mounted on a steel or copper sprig with proper bracing.
- F. Sprinklers are required throughout attics and crawl spaces that are to be used, or have the potential to be used for storage. If only a heat-producing device is installed in an attic or crawl space, sprinklers shall be installed in the vicinity of the hazard. In such condition, a listed metallic pipe shall be used in the vicinity of the hazard.
- G. Only listed and approved devices and materials shall be used. CPVC fire sprinkler pipe may be used. All materials shall be installed per their listing requirements. CPVC piping is acceptable for use in a garage when it is installed in the following manner;
 - 1. The piping is installed above a smooth flat horizontal ceiling.
 - 2. The entire ceiling and all the walls are covered with a minimum of 1/2 inch plywood or 3/8 inch gypsum board.
- H. Provide an all weather rated horn and strobe device in place of the alarm bell. Provide the manufacturers' information sheets indicating the device being used is an all weather type unit.
- I. Sprinklers are required in all closets except for linen closets. Linen closets are any closet with permanently fixed full depth shelving the entire height of the closet.
- J. Skylights are required to be sprinkler protected with intermediate temperature rated sprinkler heads. Any skylight having any dimensions greater than or equal to 4 feet by 8 feet with a depth of 12 inches, shall be sprinkler protected.

4. Plan Submittal Requirement Checklist

A typical residential fire sprinkler plans submittal shall include the following: Check off completed items.

Failure to provide the required information will result in the delay of your plan review.

- A) A complete set of piping plans drawn to scale showing all sprinkler head locations (use walls as dimensional reference) and room descriptions.
- B) Indicate the type of piping being used in all areas, (system piping, riser piping, and underground piping).
- C) Provide all piping sizing and lengths in all areas (system piping, riser piping and underground piping).
- D) Note any sloped or special ceilings.
- E) Note any exposed beams, lighting fixtures or other ceiling obstructions to the sprinkler heads.

- F) Show the attic access door and pilot sprinkler head above.
- G) Show any attic or crawl space areas that are designed for storage and provide sprinkler coverage for those areas.
- H) Indicate on the plans all heat producing zones.
- I) Specify the manufacturer of the sprinkler head, orifice size and temperature rating. Use residential sprinkler heads in habitable spaces.
- J) Provide hanger details showing all components and attachment devices.
- K) Provide a system riser detail showing all valves and devices (no shut-off devices shall be installed on the system side).
- L) Show the location of the exterior all-weather horn and strobe device.
- M) Provide the site plan, drawn to scale; showing the underground pipe size, location, water meter size and connection point to the city main.
- N) Provide a building cross section showing sprinkler system components and building construction.
- O) Provide all necessary information and details so a comprehensive plan review may be performed.

5. Hydraulic Calculation Requirement Checklist

A typical residential fire sprinkler plans submittal shall include the following: Check off completed items. **Failure to provide the required information will result in the delay of your plan review.**

NOTE: For residential additions, alteration, and/or repairs of **500 square feet or less**, a partial automatic fire sprinkler system may be permitted. A partial system is allowed provided **one** of the following conditions exists:

- a. Available street water pressure as provided by California Water is 65 psi or above.
- b. The domestic water supply between the water meter and the structure is a minimum of 3/4" piping.

Partial fire sprinkler systems can be attached to the nearest domestic water supply with a proper check valve on the fire sprinkler system side and minimum of 1" pipe size shall be used. No flow switch and test/drain valve are required. All Plan, Submittal and Inspection Requirements of this standard shall be met.

- A) Outline the calculation areas on the plans.
- B) Calculations are required for the two most hydraulically demanding heads within a compartment (not applicable for additions described above).
 - 1. Provide a 15% safety margin
 - 2. Provide an additional 10psi deduction to the calculations to accommodate water system pressure fluctuations.
- C) Indicate all hydraulic reference points on the plans.
- D) Indicate the water meter size on the plan and include the appropriate pressure drop in the calculations.
- E) Provide water flow data and the source of information on the plan. Provide a copy of **written water flow information** from California Water Service. Verbal verification is not accepted. The design contractor is responsible to ensure the accuracy of the water flow information.

6. Inspection Requirements

Failure to comply with the Inspection Requirements will result in the inspection not being completed and a reinspection fee charged. Any inspections in addition to the two (2) inspections allowed by permit, will be charged for the additional inspections. All inspections shall be scheduled 48 hours in advance. Please call the Building Inspection Line at (650)522-7170 or (650)522-7172 to schedule all inspections.

- A) Approved plans and permit shall remain on site for any inspection
- B) A hydrostatic pressure test in accordance with NFPA 13 shall be performed and witnessed by the San Mateo Building Department. All piping and attached appurtenances subjected to system working pressure shall be hydrostatically tested.

Piping shall be hydrostatically tested at 200 psi. CPVC piping shall be tested at 200 psi. The system shall maintain that pressure without loss for two hours.

- C) 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.
- D) Spare sprinkler heads, signage, sprinkler head box, and wrench shall be provided and installed prior to inspection.
- E) A sign made of a durable weather resistant material shall be affixed to the main fire sprinkler/domestic water supply valve. It shall state in a minimum of 1/4 inch letters that contrast with the background. The sign shall state, "WARNING - the water system for this home supplies a fire sprinkler system that depends on certain flows and pressures being available to fight a fire. Devices that restrict the flow or decrease the pressure such as water softeners 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."

7. Helpful Resources

- A) For list of design firms, contractors and material suppliers, please contact the Bureau of Fire Protection and Life Safety (650) 522-7940.
- B) For design purpose, water supply information is available from California Water Service Co. Water flow information requests are accepted via facsimile only.