

SANTA ROSA FIRE DEPARTMENT

FIRE PREVENTION BUREAU

PLAN REVIEW CHECKLIST

July 1, 2010



RESIDENTIAL FIRE SPRINKLERS NFPA 13D

Address:		Permit #:
Inspector:	Date:	Status:
Inspector:	Date:	Status:
A-Approved; AC-Approved w/comments; I-Incomplete; D-Denied		

This Checklist outlines general requirements. Information contained herein applies to typical instances and may not address all circumstances.

FILE REVIEW

1. **Y** **N** **SUBDIVISION MAP CONDITIONS** - Review subdivision specific conditions and history. Are fire sprinklers conditioned; is there an alternate method request approval?
2. **FEES** – Permit fees entered in Permits Plus. 3rd or greater checks require an hourly fee for the review.

PLAN REVIEW

3. A minimum of three (3) sets of drawings are provided. The plans declare the design is based on NFPA 13D 2002 edition as adopted.
4. System components are listed for intended use, specification information sheets are provided – NFPA 13D 5.1.2
5. Non-listed items can be tanks, pumps, hangers, water flow detection devices, and water flow valves NFPA 13D 5.1.3
6. 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 their single-family residence.

DRAWINGS SHALL SHOW THE FOLLOWING:

GENERAL

7. Scale: a common scale shall be used and information shall be legible - TITLE 24 CFC 901.2
8. Plot plan details illustrate the water supply connection, pipe diameters, lengths, and fittings to the building - TITLE 24 CFC 901.2
9. Building dimensions, cross sectional views, and the location of partitions are provided - TITLE 24 CFC 901.2

- | | Y | N | |
|-----|--------------------------|--------------------------|---|
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | TITLE 24 CFC 901.2 - Type of protection for nonmetallic pipe is provided. |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | TITLE 24 CFC 901.2 - Dimensions for system piping, type of pipe, and component spacing. |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | TITLE 24 CFC 901.2 - Equipment symbol legend is detailed. |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | TITLE 24 CFC 901.2 - Total number of each type of sprinkler is noted on the plans, type of sprinklers, K-factors, temperature rating, coverage area, minimum operating pressure, and orifice size are provided. |

HYDRAULIC CALCULATIONS OR DESIGN DISCHARGE

- | | | | |
|-----|--------------------------|--------------------------|--|
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.1.1.1.1. - Sprinklers without a listed discharge criteria: a single sprinkler discharge is not less than 18 GPM and a multi-sprinkler discharge design is not less than 13 GPM, |
| 15. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.1.1.2.2.- Sprinkler with a listed discharge criteria: the system provides at least the flow required for multiple and single sprinkler operation as specified by the listing, 8.1.1.2.1, and must produce a minimum discharge density of .05 GPM/ft ² , |
| 16. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D A.8.1.2. - Sprinkler design for flat, smooth ceilings consists of up to 2 sprinklers within the same compartment with the largest water demand. The definition of a compartment is in Section 4.1. |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D A.8.1.2.- Sprinkler design for sloped, beamed, and pitched ceilings could require special design features such as larger flows or a design of 3 or more sprinklers to operate in the compartment, |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.1.3.1.- Sprinklers without a listed coverage criteria shall not exceed 144 sq. ft. coverage area, |
| 19. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.4.4- Pipe diameters match the plans and size is determined by hydraulic calculations, Reference points match with plans, legend for calculation abbreviations are provided. |
| 20. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.4.4 - Water flow information such as static PSI, residual PSI, and available GPM at 20 PSI residual is provided. Sprinkler data sheet matches what is on the plans and hydraulic calculations. |
| 21. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.4.4.- Hydraulic calculations can be provided using one of three methods described in Section 8.4.4 when the system is connected to a municipal water main of at least 4 in. in diameter and typical calculations include static PSI, pipe length, discharge GPM, the calculated K factor for riser or drop nipples, elevation data, friction loss, friction loss data for gate valve and backflow prevention device and equivalent pipe length, |
| 22. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.4.7-8.4.9.- Hydraulic calculations are also required when a system is gridded, looped, or connected to a city main less than 4 in., |

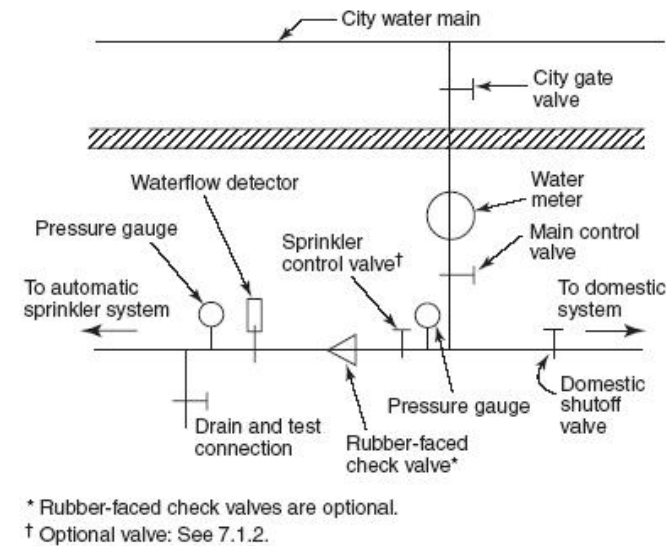
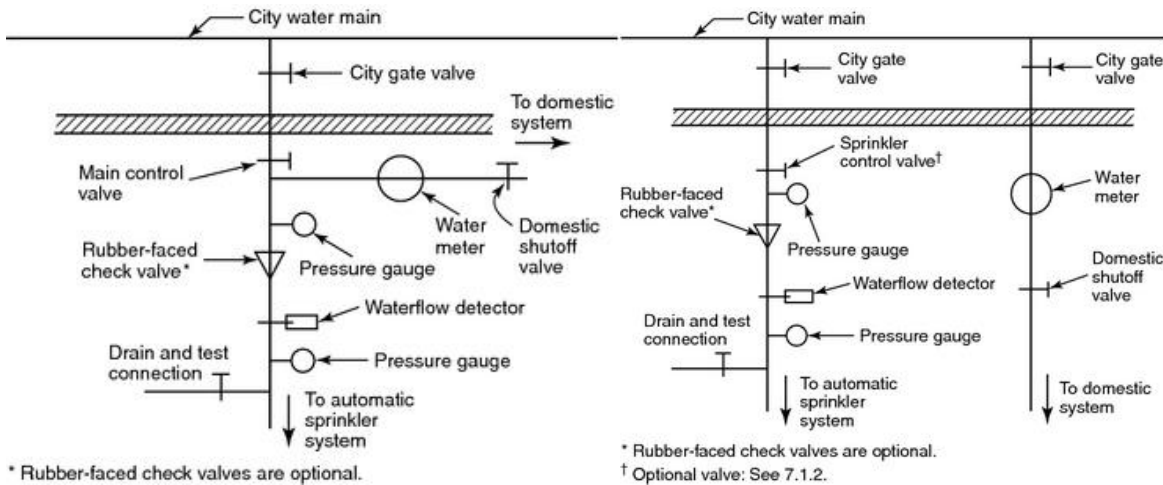
WATER SUPPLY

- | | | | |
|-----|--------------------------|--------------------------|--|
| 23. | <input type="checkbox"/> | <input type="checkbox"/> | FPA 13D 6.1.2 and 6.1.3 - If a stored water supply is used, it shall provide the water demand rate. |
| 24. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 6.2 - A reliable water supply is provided with a control valve located in advance of the domestic supply. Any exposed valve stems/handles shall be secured (locked) to prevent accidental shut-off. |
| 25. | <input type="checkbox"/> | <input type="checkbox"/> | Supply pipe size and meter – matches hydraulic calculation design inputs |

DESIGN

One and two family dwellings fire sprinkler systems shall be per NFPA 13D, 2002 edition as amended by Sonoma County Fire Agencies. The garage exception does not apply.

26. Title 24 CFC 901.5 - Approved plans and permit on site for inspection.
27. NFPA 13D 6.2 - Water Supply Sources.- The following water supply sources shall be considered to be acceptable by this standard:
- A connection to a reliable waterworks system with or without an automatically operated pump.
 - Preferred and acceptable water supply arrangements are shown below:



28. NFPA 13D 7.1.1 (*) - Each system shall have an indicating ball style brass control valve at the base of the riser that controls both the sprinkler system and domestic water. The valve shall be installed a minimum 6" above grade and easily accessible. A separate shut-off valve for the domestic water may be installed on the system side of the control valve. Other than a water meter shut-off valve no other system control valves are permitted including valves on a backflow device.

Dev
Plan Review Checklist
Residential Fire Sprinklers 13D

- | | Y | N | |
|-----|--------------------------|--------------------------|---|
| 29. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.1.1.1 (*) - Sprinkler system has a single soft seated check valve installed on the system side of the control valve. Unless approved by the fire department, no additional check valves or pressure reducing valves shall be installed on the sprinkler system. If backflow devices are required by the water purveyor, the device shall be installed before the domestic connection and be reflected in the hydraulic calculations. |
| 30. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.3.1 - Where a dry system is installed, a pressure gauge shall be installed to indicate system air pressure. |
| 31. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.3.2 - Where a pressure tank is used for the water supply, a pressure gauge shall be installed to indicate tank pressure. |
| 32. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.3 - Provide a gauge for a wet system, dry system, or a system using a pressurized tank as a water supply source. |
| 33. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 8.3.1 - Wet pipe system is used when not subject to freezing. Is the supply riser in a heated environment? |
| 34. | <input type="checkbox"/> | <input type="checkbox"/> | Riser pipe diameter matches hydraulic calculation input |
| 35. | <input type="checkbox"/> | <input type="checkbox"/> | Riser sign |
| 36. | <input type="checkbox"/> | <input type="checkbox"/> | Provide a drain at the riser |

MULTIPURPOSE PIPING SYSTEMS

- | | | | |
|-----|--------------------------|--------------------------|--|
| 37. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 5.2.5.3. - Multipurpose system, without an FDC, that uses nonmetallic fittings, the fittings are designed to an operating pressure of 130 PSI or greater, |
| 38. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 6.3. - The piping system serving both sprinkler and domestic needs is acceptable if: |
| 39. | <input type="checkbox"/> | <input type="checkbox"/> | The common water supply is serving more than one dwelling unit, 5 GPM is added to the sprinkler demand, |
| 40. | <input type="checkbox"/> | <input type="checkbox"/> | Smoke alarms are provided |
| 41. | <input type="checkbox"/> | <input type="checkbox"/> | All pipe used is listed, |
| 42. | <input type="checkbox"/> | <input type="checkbox"/> | Pipe connected to the system serving plumbing fixtures need not be listed, |
| 43. | <input type="checkbox"/> | <input type="checkbox"/> | Permitted by the plumbing code official, |
| 44. | <input type="checkbox"/> | <input type="checkbox"/> | A sign adjacent to the main shutoff indicates it serves the fire sprinkler system with verbiage per the code section, |

Devices that restrict the flow shall not be added and water treatment and filtering systems shall be bypassed.

PIPE AND VALVES:

- | | | | |
|-----|--------------------------|--------------------------|--|
| 45. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 5.2.1. - Type and size of pipe is provided. Pipe to be used complies with the pipe listed in Table 5.2.1 and nonmetal pipe is listed for fire protection service. Minimum 3/4 inch pipe diameter. |
| 46. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.1.1.- One control valve is provided for both the domestic water and sprinkler. |
| 47. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.2.1. - A drain and test connection is provided in accordance with this section. |
| 48. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13D 7.2.4. - A water flow test connection is provided if a water flow alarm is provided. |

PIPE SUPPORT AND HANGERS

49. **Y** **N** NFPA 13D 7.4 – 7.4.4 - Piping support shall comply with submitted manufacturers’ instructions and/or listing criteria. The plumbing code will be consulted for piping that does not have support criteria provided. Lateral movement is prevented for pipe laid on joists or rafters and in general, pipe movement is to be supported to restrain movement.

SPRINKLERS

50. NFPA 13D 7.5.2. - Residential sprinklers are limited to wet systems unless listed for other uses,
51. NFPA 13D 7.5.5.1.- Sprinklers are ordinary temperature (135°F-175°F) when the ceiling temperature does not exceed 100°F,
52. NFPA 13D 7.5.5.2.- Sprinklers that are in areas with ceiling temperatures of 101°F-150°F are intermediate temperature (175°F-225°F),
53. NFPA 13D 7.5.5.3. - Intermediate sprinklers shall be used for skylights exposed to direct sun, un-vented concealed spaces under un-insulated roofs or un-vented attics.
54. NFPA 13D 7.5.5.3- Sprinklers near heat sources are located in accordance with Table 7.5.5.3,
55. NFPA 13D 8.1.1.- Each sprinkler coverage area is within its listing limitation,
56. NFPA 13D 8.1.3.- Spacing between sprinklers and distance from walls does not exceed the limits specified,
57. NFPA 13D 8.1.3 and 8.2 - Sprinkler location is accordance with its listing criteria and the requirements in Sections 8.1.3 and 8.2.
58. FPA 13D 8.2.2.1.- Sidewall deflectors are 4 ft. to 6 ft. from the ceiling unless listing allows otherwise,
59. NFPA 13D 8.2.6.- A single sprinkler at the highest ceiling level can provide coverage for closets and storage areas not exceeding 300 cu. ft. and the lowest point of the ceiling height is 5 ft.,
60. NFPA 13D 8.6.2.- Sprinklers are required in dwelling unit bathrooms exceeding 55 sq. ft.
61. NFPA 13D 8.6.3.- Sprinklers are not required in dwelling unit clothes closets, pantries, or linen closets, provided the closet area, its least dimension, and its method of construction complies with this section,
62. NFPA 13D 8.6.5. - Sprinkler protection for unused attics, crawl spaces, and concealed spaces is not required, a pilot head shall be provided above each attic access. Heat sources within the attic shall be protected.
63. NFPA 13D 8.6.6.- Sprinkler protection for covered unheated projections from buildings at entrances is not required if another exit is available from the dwelling unit,

ALARMS

64. NFPA 13D 7.2.4 and 7.6. – An exterior notification appliance shall be placed in a location to permit notification in sleeping areas.
65. An inspector’s test connection is provided. The outlet shall be in a remote location unless a combination “drain/test” valve is installed at the riser. If a hose bib is utilized, the hose threads shall be disabled. The outlet shall be supplied with an inspectors test sign.