

MILL VALLEY FIRE DEPARTMENT



Prepared by *JD*
Jeff Davidson, Battalion Chief/Fire Marshal
Approved by *Greg Moore*
Gregory R. Moore, Fire Chief

Fire Protection Standard 401

FIRE SPRINKLER SYSTEMS ONE AND TWO FAMILY DWELLING UNITS

Date: 1-11-11

Revision: 2

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This Standard is promulgated pursuant to the Mill Valley Fire Department amendments to the California Fire Codes regarding the requirements for automatic fire sprinkler systems. For alarm monitoring requirements reference Mill Valley Fire Department Standard 400.

I When Required:

A. A fully automatic fire sprinkler system shall be required:

1. In all new construction
2. In all substantially remodeled structures.
3. As otherwise required by ordinance.

Exceptions:

1. Free standing Group U Occupancies not more than 1,000 square feet and provided with exterior wall and opening protection as per Table 5-A of the Building Code.
2. Agricultural buildings as defined in Appendix 3 of the Building Code and not exceeding 2,000 square feet, having clear unobstructed side yard of combustible materials, exceeding 60 feet in all directions and not exceeding 25 feet in height, and located within an Agricultural zoned district as defined in the Marin County Planning Code.
3. Any permissible reductions in fire flow stipulated by Uniform and/or California Fire Codes shall not be applied unless approved and the entire building is fully sprinkled in accordance with NFPA Std. 13. Such cases may be approved by the Fire Marshal. In any case, the available fire flow shall not be less than 1,500 gallons per minute.

II Permits and Plans

- A. A Fire Department Permit application shall be obtained for all fire protection and extinguishing systems. The Permit application shall be completed and plans reviewed prior to installation. Contact the Mill Valley Fire Department (415) 389-4130 for permit applications.
- B. Plans shall be submitted as follows. At least three (3) sets of architectural or engineered blue line drawings shall be accompanied by three sets of calculations and material specification sheets for piping, fittings, and sprinkler heads.

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III One and Two Family Dwelling Units

A. Buildings that are intended for occupancy as a one or two family dwelling unit shall have an automatic residential fire sprinkler system installed in accordance with most recent published edition of National Fire Protection Association Standard 13D with the following modifications:

1. Plan check and inspection fees shall be paid at the time of plan submittal.
2. Plans must be approved and a copy of the approved plans must be at the job before any work commences.
3. Systems shall be designed in accordance with either NFPA 13D or NFPA 13R except where superseded by this standard, or in unusual situations by the Fire Code Official.
4. Homes with more than 6,000 sq.ft. of sprinkled area shall be designed in accordance with NFPA 13R and these standards.
5. All attached garages shall be fully sprinkled.
6. All bathrooms shall be sprinkled.
7. Pilot heads shall be installed in attic areas above each access and above any HVAC or water heating equipment.
8. Underfloor areas, areas beneath staircases, and crawl spaces intended or accessible for storage or habitation shall be sprinkled.
9. Systems designed in accordance with 13R shall have a fire department connection, the location and size of the FDC must be approved by the AHJ.
10. Plans shall show an elevation cross section of the building showing every situation other than smooth, flat, horizontal ceilings.
11. Hydraulic calculations shall show a 5 gpm demand at the point of domestic connection. Where more than one dwelling is served by the domestic connection, 5 gpm shall be added for each dwelling unit. Where irrigation systems are designed to flow more than 5 gpm, the maximum designed flow shall be added.
12. A 10% safety margin, in pressure, shall be provided in the design at the point of connection to the public main.

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13. Plans for systems requiring a pump shall include all information regarding the pump and associated plumbing.
14. In systems that require the use of a pump that will not be used for the domestic supply, special electrical wiring or plumbing provisions may be required which shall be approved by the fire prevention bureau at the planning stage.
15. Valves that are capable of shutting off the water supply to the fire sprinkler system shall also shut off the domestic supply to the dwelling.
16. The exterior alarm bell shall be mounted so as to be audible in the Master Bedroom above ambient noise levels with all doors and windows closed. The bell shall have a sign stating "CALL FIRE DEPARTMENT" or similar wording. An additional alarm shall be placed in the interior of the home that can be heard in all sleeping areas, or, shall be interconnected to the smoke detectors, which will sound an alarm in all sleeping areas.
17. Inspectors test valve shall be provided at the most remote area of the system, or, when any story of the home is below the level of the riser drain, located so as to provide an auxiliary drain to prevent trapped water.
18. A spare head box shall be provided along with the appropriate spare heads, a sprinkler head wrench, and a water key for testing the inspectors test valve.
19. The sprinkler contractor shall have a representative present at all sprinkler system inspections.
20. When significant changes are made to the system from the approved plans, a set of the approved plans with the changes "red-lined" shall be provided to the inspector at the rough in/hydro inspection.
21. Control valves and riser shall be installed as shown in Figure 1.

IV Hotels/Motels and Apartment Buildings

- A. Buildings that are intended for occupancy as a Group R Division 1 Occupancy as defined by the California Building Code, shall have an automatic residential fire sprinkler system installed in accordance with the most recent published edition of National Fire Protection Association Standard 13R with the following modifications:
 1. A remote inspector test valve is required at the furthest remote portion of the system.

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2. Pilot heads shall be installed in the attic spaces directly above every attic access opening.
3. All garages shall be sprinkled in accordance with NFPA Std. 13 for Ordinary Hazard occupancies.
4. A sprinkler head box shall be installed in every building near the main sprinkler riser and shall include at least six heads of each type installed, a sprinkler head wrench, and a water key to test the remote inspector test valve.
5. A durable and permanent sign shall be installed at the test valve stating "Inspector Test Valve".

- B. Any permissible reductions in fire flow stipulated by Uniform and/or California Fire Codes shall not be applied unless approved and the entire building is fully sprinkled in accordance with NFPA Std. 13. Such cases may be approved by the Fire Marshal. In any case, the available fire flow shall not be less than 1,500 gallons per minute.

V All Commercial Structures

- A. An automatic fire sprinkler system shall be installed in all of the following in accordance with the most recent published edition NFPA Std. 13:
1. Every newly constructed, freestanding building or facility.
 2. In newly created attached second dwelling units.
 3. In all buildings which has more than fifty per cent (50%) floor area added or any "substantial remodel" as defined in this standard, within any 12-month period. The Chief may grant exceptions when alternate means of protection are installed as approved by the Chief.
 4. In all buildings except R-3 occupancies, in excess of 3,000-sq. ft. which have more than ten per cent (10%) floor area added within any 12-month period. The Chief may grant exceptions when alternate means of protection are installed as approved by the Chief.
 5. In all existing buildings, where fire sprinklers are required by provisions of this code, they shall be extended into all unprotected areas of the building in accordance with standards developed by the Chief.
 6. All public storage facilities shall be provided with an automatic fire sprinkler system.

VI Substantial Remodel Defined

- A. Substantial Remodel shall mean the renovation of any structure, which combined with any additions to the structure, affects a floor area, which exceeds fifty percent of the existing floor area of the structure. When any structural changes are made in the

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building, such as walls, columns, beams or girders, floor or ceiling joists and coverings, roof rafters, roof diaphragms, foundations, piles or retaining walls or similar components, the floor area of all rooms affected by such changes shall be included in computing floor areas for purposes of applying this definition. This definition does not apply to the replacement and upgrading of residential roof coverings.

Example of calculation:	Total base of initial existing walls	1232 feet
	50% of base =	616 feet
	Walls removed	281 feet
	Walls added	<u>312 feet</u>
	Walls altered	593 feet

The total walls altered is less than 50% of the base, therefore, sprinklers are not required.

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Figure 1

