MONTECITO FIRE PROTECTION DISTRICT
FIRE PROTECTION PLAN

Section 5a

Residential Automatic Fire Sprinkler System Installations

I Automatic Fire Sprinkler System Standards

1. Definition and Standard: An automatic fire sprinkler system is an integrated system of underground and overhead piping designed and installed in accordance with fire protection engineering standards (reference standards) as may from time to time be adopted by the District. The system shall include one or more automatic water supplies. These reference standards may include:

a. Standards 13, 13D, 13R, and 24 as developed and published by the National Fire Protection Association;

b. California Fire Code and California Residential Code Standards as developed and published by the International Code Council, Inc. and the California Building Standards Commission;

c. Sections 5a and 5b of the District's Fire Protection Plan as may be amended from time to time.

II When Residential Fire Sprinkler Systems are Required

1. Locations Required: Notwithstanding any other requirement of the Code of the County of Santa Barbara, and except as otherwise provided in this Section, automatic fire sprinkler systems shall be installed in and maintained in all occupancies and locations set forth as follows:

a. It is the policy of the Fire District to require an approved residential fire sprinkler system in all new one and two family dwellings and townhouses as stipulated in the Code.

b. Any new building for which application for building permits are filed or are required to be filed with the County of Santa Barbara regardless of square footage.

c. Existing Residential Structures: Additions or modifications to existing residential buildings or structures for which applications for building permits are filed or are required to be filed with the County of Santa Barbara shall require installation of an automatic fire sprinkler system throughout the entire residential building or structure if: (A) the additions or modifications increase or replace portions of the gross floor area to 3500 square feet or more and the aggregate structural alteration / addition is greater than 1000 square feet in gross floor area cumulative; *or* (B) the cumulative area of all of the work areas included in the additions or modifications exceeds 50 percent of the gross area of the building or structure.

(i) For the purpose of measuring cumulative square footage, the Fire District shall include all additions or modifications occurring on or after October 16, 1991.

(ii) Separate buildings such as detached garages, cottages, auxiliary structures, that are located within 30 feet of the main structure shall be included in the overall accumulative total of gross square footage of the main residence.

d. Buildings: Separate buildings such as garages, cottages, pool house, cabana's, auxiliary structures, etc. …shall require approved residential sprinkler systems under this standard.

e. All buildings and structures for which applications for building permits for additions and or structural alterations are filed with the County of Santa Barbara County which are not served by water supplies meeting District standards or are served by stored water systems.

f. Residential structures over 10,000 square feet of living area shall require sprinkler installations per NFPA 13R.

III Residential Fire Sprinkler Guidelines for Plans Submittal

1. The property owner shall submit three (3) sets of plans, data sheets, and calculations for the proposed sprinkler system to the Fire District for review and approval prior to installation. Plans shall include the information:
   - *a.* Property owner
   - *b.* Address of property
   - *c.* Assessor's Parcel Number (APN)
   - *d.* Plot map indicating all structures, water meter location and size, underground pipe size, point of connection, length and type of pipe to be installed.

e. Proposed installation company: Include contact information along with State Contractors License number.
f. Full height cross section showing beamed ceilings, vaulted ceilings, attic areas, and sub-floor basements.
g. Riser Detail: Indicating double check valve assembly, pressure gauge, drain valve, flow switch, pressure relief valve, hammer arrester, domestic water control valve.
h. Detailed Hydraulic Calculations: One copy
i. Sprinkler head spacing
j. Show all non-sprinklered areas
k. Indicate manufacture, style, sprinkler model orifice size a "K" factor for each sprinkler used.
l. Pipe information: type and size
m. Hanger detail
n. Inspectors test valve
o. Identify each room and space of the buildings
p. Location of heat sources: Fireplaces, ovens and cook tops, heating devices, FAU.
q. Water flow information: Static pressure, residual pressure, flow.

2. The following shall appear on each sheet of required shop drawings: "I certify that this sprinkler system is in full compliance with the design criteria of the Montecito Fire Protection Plan". This note shall appear along with the sprinkler contractor's dated signature and seal.

3. Approved shop drawings shall be maintained on the job site during all phases of system installation. Any field changes shall be noted on the drawings. The edited drawings shall be submitted to the Fire District prior to final Fire District approval.

4. Copies of Manufacturer's data for all installed system components shall be provided upon Fire District request prior to final system acceptance. All system components shall be installed following manufacturer's guidelines unless specific relief is granted by the Fire Chief.

5. Listed and Labeled: Only UL listed and labeled devices and materials shall be installed and used in accordance with the listing limitations and manufactures guidelines. Only new sprinkler heads and components shall be installed in the systems.

IV Water Supply

1. Water Supply: All connections to domestic water supply shall be made in accordance with applicable codes and standards of the County and any local water purveyor.

2. Water Supply Main: All residential sprinkler systems shall have a single supply main from the meter serving both domestic demand and the sprinkler system. A dedicated main solely for sprinkler system may be required on a case by case basis.

3. Domestic Water Supply Shut Off: Domestic water supply shut off valve on the supply line shall be installed on the domestic side of the sprinkler system riser (system plumbing including flow switch and valves). This is to assure the sprinkler system remains in service when domestic supply is shut off.

4. Riser Location: Separate system risers may be installed remote from the domestic water source however must be easily located outside of the building.

5. Conceal Riser: All system risers shall be installed on the outside of the building unless otherwise approved by the Fire Official to conceal the riser in walls, basements, etc…

6. Water Supply: Domestic water supply must be connected to the fire sprinkler system at rough inspection.

7. Alarms: All sprinkler systems shall have a minimum six-inch exterior bell mounted and linked to the system flow switch and shall be monitored by an approved alarm service.

8. Back Flow Prevention: For back flow prevention, an approved double check valve assembly shall be installed at system riser.

9. Sprinkler System Shut Off: Shut off valves shall be installed on each side of the double check valve and shall be chained and locked in the open position prior to final system acceptance.

10. Water Hammer Arrester: An approved water hammer arrestor shall be installed on the sprinkler system riser when water supply is provided by from the local water purveyor. This component shall be located on the supply side of the system flow switch.

11. Pressure Relief Valve: An approved poppet type pressure relief valve shall be installed between the required backflow prevention device and the system flow switch. Design pressure shall not be greater than 160 psi. A pressure regulator shall be installed where incoming pressures are in excess of 160 psi.

12. Domestic Water Demand: System hydraulic design shall provide for an allowance of five gallons per minute (GPM) for domestic demand.

13. Inspector's Test Valve: Property owner shall install non-threaded one-half inch ball valve at the remote area of the system to serve as the inspector's test valve. This same type of valve shall be located at the riser to serve as a system drain. Any threads on these outlets are to be removed.

14. Flow Testing the System: Flow rate is measured for a thirty second period and shall conform to the manufacturer's listing criteria for the installed sprinkler heads plus an additional 5 GPM for domestic supply. Contractors shall provide all equipment necessary for conducting this test.

15. Automatic Booster Pump: When domestic water supply pressure is insufficient to produce enough water flow and pressure to accommodate a fire sprinkler system, a booster pump can be integrated into the system to augment domestic and fire flow demand.

V Sprinkler Riser System Components

1. All risers shall be easily located, preferably on the outside of the building in plain sight. Risers may be installed in an access panel on an outside wall with permanent labeling on the door. Alternate locations to this standard must have prior approval by the Fire Official.

2. The system riser shall branch off the domestic supply line on the supply side of the main shut off valve. This is to assure the sprinkler system remains operable when the domestic supply is shut off.

3. All risers shall be built with copper piping and all shut off controls shall be ball valve design.

4. Check Valve: For back flow prevention, an approved double check valve assembly shall be installed on the system riser.

5. Sprinkler System Control Valves: There shall be two shut off ball valves located on each side of the double check valve. These valves shall be locked in the open position upon final inspection.

6. Gauge: A UL listed 300psi gauge shall be installed.

7. Pressure Relief Valve: An approved poppet type pressure relief valve shall be installed on the riser and located between the back flow device and the system flow switch. Device shall be set with a with a design pressure of 160 psi. Note: This valve will not be required when sprinkler system is supplied from a gravity fed stored water system.

8. Hammer Arrester: An approved hammer arrester shall be installed on the riser when water supply to the system is provided from the local water purveyor.

9. Drain Valve: An unthreaded 1/2 inch ball valve shall be installed on the system and positioned such that flow will be to the outside away from the building.

10. Flow Switch: A system flow switch shall be installed and have the capability of a 90 second delay. It shall be equipped with two connections; one for a local exterior 6 inch bell and one for alarm system monitoring. All flow switches shall be set for a 30 second delay.

11. Signage: All sprinkler system shutoff valves shall have an all weather sign affixed identifying the buildings they serve.

12. Alarms: Each sprinkler riser shall have a minimum 6 inch alarm bell affixed to an exterior wall of the structure positioned such that it can be heard by closest neighbor when activated.

VI Residential Sprinkler System Design

1. Piping: The following list of approved piping is acceptable to use in residential fire sprinkler systems installations: Type "M" copper, Type "L" copper, steel pipe, and Chlorinated Polyvinyl Chloride (CPVC) plastic.

(ii) Note: Type "K" copper pipe is unacceptable to use

2. Hanging Methods: All piping shall be provided with approved hangers and supported per manufactures requirements. Refer to Standard VII of this section for further information on hanging pipe.

3. Sprinklers: Only new residential sprinklers shall be installed unless otherwise indicated in the Code. Sprinklers shall only be installed according to their listing. When construction parameters exist that prevent listed sprinklers from being installed, sprinklers may be installed out of their listing when a three head calculation is provided and tested on site.

4. Sprinklers in Beams: Listed beam sprinklers shall be installed a maximum 16 feet apart with beam depths up to 14 inches. Sprinklers shall be installed in beam pockets when beams exceed 14 inches in depth.

5. Attics: A single intermediate temperature upright sprinkler head shall be located within six inches of the roof ridge beam in each discrete attic area or at 30-foot maximum intervals along any main piping.

6. Exterior Porches: All roof lines, canopies, porches, patios, and overhangs that exceed 4 feet in length shall have intermediate sprinkler heads spaced per listing requirements.

7. Forced Air Units (FAU): A single intermediate temperature sprinkler shall be installed over each individual FAU. When there is more than one FAU in a single location, sprinkler heads shall be spaced as per Ordinary Hazard.

8. Water Heater Closets: All water heater closets regardless of size require fire sprinklers.

9. Closets: Closets that exceed three feet in depth or any that have light fixtures installed are required to have sprinklers.

10. Garages and Open Carports: Garages and open carports shall be protected with intermediate temperature commercial sprinklers spaced a maximum 100 square feet apart.

11. Bathrooms and Saunas: All bathrooms, regardless of size, shall be protected with sprinklers. Sauna rooms shall be protected with 286 degree sprinklers.

12. Crawl Spaces and Attics: Crawl spaces with concrete floors and any attic spaces intended for storage shall have sprinklers spaced accordingly with cage protectors.

13. Mechanical Rooms: Intermediate temperature sprinkler heads are required and spaced for ordinary hazard with cage protectors.

14. Elevator Shafts: One intermediate sprinkler head shall be installed near the bottom of the shaft.

15. Heat /Return Air Registers: Sprinklers shall be located no closer than two feet from any register.

16. Ceiling Fans and Large Light Fixtures: Sprinklers shall be installed on both sides on a surface mounted fan or light fixture to prevent blocking the spray pattern.

17. Heads shall be located a minimum eighteen inches away from any HVAC diffuser grille.

18. Pendant head diffusers may be located a maximum of eight inches below the finished ceiling level. A three head design will be required for any system installed in barreled, coffered, exposed beam or cathedral type ceilings.

19. Sprinkler spray patterns shall not be obstructed and all head clearances shall be provided as required by NFPA 13D

20. Property owner shall install non-threaded ½-inch ball valve at the remote test connection as an inspector's test valve and at the riser as a system drain valve. Any threads on these outlets are to be removed.

VII Sprinkler Pipe Installation Requirements

1. Copper Pipe

a. All materials delivered to the job site shall be protected from the physical elements and damage. Any damaged, gouged, cut, scratched heads, pipe or fittings shall be removed and replaced.

b. No corrosive or self-cleaning fluxes shall be used. Joints shall be wiped clean of excess flux and solder.

c. All piping running through studs or masonry shall be protected by elastomeric or plastic sleeves at three-foot maximum intervals.

d. Nails are unacceptable as a means of securing hangers and supports. Piping shall be supported at the following maximum intervals:

- Within six inches of all sprinkler drops
- Within eighteen inches of all joints
- Within four foot intervals on CPVC piping
- Within six foot intervals on copper tubing

e. Hangers: Refer to local plumbing codes for acceptable hanger types. Hangers shall be installed every twelve feet and within one foot of any sprinkler.

f. Copper pipe may be exposed in attics, porches, canopies, garages and open carports.

g. Spray Foam Insulation: When spray foam insulation is applied around sprinkler heads, a minimum of six inches shall be maintained between the spray foam insulation and all sides of the sprinkler head.

h. Approved copper pipe must be utilized and protected when application calls for piping running through the sub-roof assembly just below roof decking.

i. Approved Pipe: Type "M" copper, Type "L" copper.

2. CPVC Pipe

a. Installers shall have attended a practical application training class by a CPVC pipe manufacture and have in possession a pocket card verifying proper certification to install this pipe.

b. Hangers shall be approved for CPVC Pipe and installed every six feet along the length of the pipe and within six inches from sprinkler heads.

c. CPVC pipe shall not be installed in exposed areas such as porches, canopies, garages, open carports, etc…

d. Roofs/Vaulted Ceilings: CPVC piping shall not be installed in roofs where there is no attic space. Copper pipe shall be used in these applications and joined together with CPVC piping in the attic space.

e. Spray Foam Insulation: CPVC pipe must be protected as per manufactures recommendations where it could come in contact with spray foam insulation. Under no circumstances is CPVC pipe allowed to be encased by this product without protection. When spray foam insulation is applied around sprinkler heads, a minimum of six inches shall be maintained between the spray foam insulation and all sides of the sprinkler head.

f. Incompatible Materials: Materials that have been identified as incompatible with CPVC shall not be allowed to contact the pipe. Examples of such materials are Romex electrical wiring, flexible wire/cable, metallic ducting, and communication lines. Check CPVC manufacture product data sheets for a complete list of incompatible materials.

g. Test Plugs: For CPVC piping, no sprinkler heads shall be installed in any system until the Fire Official has completed both flow test and rough inspections. At this stage of inspection, test plugs must be installed.

VIII Inspection Requirements

1. Rough Inspection: Full visual inspection of all system components, piping, connections, etc…System must pass inspection before being covered.

2. Test Plugs: For CPVC piping, no sprinkler heads shall be installed in any system until the Fire Official has completed both flow test and rough inspections. At this stage of inspection, test plugs must be installed.

3. Flow/Bucket Test: Flow testing of system is required. Flow shall be measured for a thirty second flow period and shall conform to the manufacturer's listing criteria for the installed sprinkler heads from the furthest most remote area of the system. Contractors shall provide all equipment necessary for conducting test.

4. Hydrostatic Test: Each system shall be hydrostatically tested at no less than 200 psi for copper and steel systems and at 150 psi for all CPVC systems. System shall hold a desired pressure for a minimum period of two hours.

5. Final Inspection: At final inspection, fire sprinkler covers/escutcheons shall be installed. Sprinkler head box shall be mounted in plain sight in garage or mechanical room. Included in the box shall be three spare sprinkler heads per type installed in the system and a wrench sized for each type of head. Alarm system shall be connected and "on line" to local alarm monitoring service at the time of inspection. System shall be flowed and tested for operability and assurance that proper communication links are in place prior to final approval for occupancy clearance.

6. Maintenance Schedule: The sprinkler contractor shall provide the property owner with maintenance information as described in NFPA 13D. Property owner shall maintain the system consistent with these requirements