Menlo Park Fire Protection District
Fire Prevention Bureau
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MENLO PARK FIRE PROTECTION DISTRICT STANDARD
FIRE PROTECTION SYSTEMS
INSTALLATION OF FIRE SPRINKLER SYSTEMS

SCOPE: This standard applies to the design and installation of automatic fire sprinkler systems in all buildings and structures except one and two-family dwellings and manufactured homes. This standard shall be used in conjunction with NFPA 13, the 2010 California Fire Code, the 2010 California Building Code, other applicable national standards and manufacturer recommendations.

1. RESPONSIBILITY

A. All individuals and companies who intend to engage in the installation or alteration of fire sprinkler systems are subject to the requirements of this standard.

B. Installer. The fire sprinkler system shall be installed by an individual who holds a State of California C-16 Contractor's License.

C. Designer. Plans shall be designed by a State of California C-16 Licensed Contractor or by a Registered Professional Engineer (Civil, Mechanical, or Fire Protection), licensed by the State of California, Board of Professional Engineers. All copies of the plans shall be stamped and signed by the licensed individuals.

D. A C-16 Licensed Contractor shall only design systems that the firm has a contract to install.

2. GENERAL REQUIREMENTS

A. When alterations of the existing light hazard sprinkler system exceeds 50% of the compartmented area the existing fire sprinklers shall use quick response sprinklers, if the sprinklers are spaced at light hazard in accordance with NFPA 13.

B. Sprinkler system water flow alarm and valve tamper switches are required to be supervised by an approved central station for systems with more than 20 sprinklers. Shell buildings and tenant areas will not receive a final inspection until the sprinkler alarm supervision is complete and in service.

C. An exterior door shall provide direct access to fire sprinkler risers.

D. When any building or structure or portion thereof, undergoes an alteration the portion of the fire sprinkler system in the alteration shall be upgraded to current codes and standards. This shall include but not be limited to the upgrading of seismic joints, sway bracing, fasteners and hangers.

E. CPVC Piping shall not be allowed for any NFPA 13 fire sprinkler system.

3. WATER SUPPLIES AND HYDRAULIC CALCULATIONS

A. For single story buildings or structures with an interior height of up to 18 feet as measured from the finished floor to the underside of ceiling, the minimum sprinkler design shall be 0.18 gpm over the most remote 3,000 sq. ft. area plus 500 gpm for hose streams. For buildings or structures with an interior height of over 18 feet from finished floor to the underside of the ceiling, the minimum sprinkler design shall be 0.33 gpm over the most remote 3,000 sq. ft. area plus 500 gpm for hose streams. With written approval from the fire code official, schools, churches and similar occupancies which have few hazards and are unlikely to change may use the minimum sprinkler design densities allowed by NFPA 13 and CFC Chapter 9.

B. Sprinkler design shall be adequate for all anticipated high hazard situations such as high piled combustible storage, plastic storage 6 ft or higher, flammable liquids and other special hazards.

C. The original sprinkler design for the building shall be maintained during all tenant improvements and other changes. One sprinkler may be added per plugged outlet including the original sprinkler calculations. All other additional sprinklers are to be added to from cross mains and feed mains unless the system is recalculated to verify that the additional sprinklers are acceptable.

D. NFPA 13 Section 11.2.3.3.3, Room Design Method, shall be omitted. The sprinkler design for any light hazard occupancies shall be not less then 0.1gpm over the most remote 1,500 sq. ft. area.

E. The following information shall be contained in the hydraulic calculations.
   a. Calculations must conform to manufacturer's specifications.
   b. "K" factors for all sprinklers.
   c. "C" values for the type of pipe used.
   d. A pump curve or city supply curve, where the total demand point is clearly plotted.
   e. A 10% reduction in the available water pressure shall be included in all calculations

F. When water storage tanks are required, each tank shall have a connection to a supply

source to refill the tank automatically.

4. SYSTEM COMPONENTS

A. In addition to system components required by NFPA 13, all systems shall also include the following:

1. An approved rubber faced check valve shall be located on the system side of the main control valve.

2. All valves shall have an all-weather sign affixed to them, which indicate their purpose.

3. For systems with normal operating pressure in excess of 100psi, a listed pressure relief valve shall be installed on the riser.

4. Floor Control valves shall be provided on each floor of any building or structure two or more stories in height.

5. Check valves shall be provided on each floor of any building or structures.

6. The flow switch shall be installed within stainless steel pipe.

5. PLAN SUBMITTAL PROCEDURE

A. Submit a Menlo Park Fire District Plan Review Application, a minimum of two sets of plans, hydraulic calculations, and the appropriate fees (See Menlo Park Fire District Fee Schedule). All fees shall be paid at the time of plan submittal.

B. Plans will be checked and if approved, will be stamped, signed and dated. The Fire District will retain one set.

C. One copy of the Fire District stamped plans and the original permit card shall be maintained on the job site.

D. All modifications/changes to existing systems require a plan check and inspection by the Fire District.

E. Excessive field changes may require re-submittal of plans along with additional plan check fees.

6. PLAN SUBMITTAL INFORMATION

A. Sprinkler plans and calculations shall be submitted with all the information required by the latest approved edition of NFPA 13, INCLUDING ALL DETAILS FOR HANGERS, and EARTHQUAKE SWAY BRACING AND FASTENERS. The sprinkler system will not receive a final inspection unless and until the installation is in accordance with the approved plans, and the placard with the design information has been provided on the riser. NFPA 13-6.1, IFC 901.2

B. To speed up the plan check process and to avoid the possibility of returning the plans for corrections, please use the following checklist, prior to submittal, to insure that the appropriate information is included on the working sprinkler drawings:

1. Name of owner and/or occupant
2. Location of project, including street, number, and city.
3. Name of sprinkler installer, address, phone number, type of license and license number.
4. Total number of square feet.
5. Point of compass.
6. All plans must be to scale or dimension. The scale shall be no smaller than 1/8 inch=1 foot.
7. Plot plan showing tank, pump, structures, underground pipe size and type, point of supply connections, depth of bury, type and size of any valves or meters.
8. Piping plan showing tank, pump, and structure elevations as they relate to each other.
9. Full height cross-section showing building construction types, vaulted, and beamed ceiling locations.
10. Water tank details including size and type of construction (where applicable).
11. Detailed hydraulic calculations (See item 3 above).
12. Sprinkler head spacing.
13. Show clearly all unsprinklered areas.
14. Indicate manufacturer, style, model, orifice size, and “K” factor of each sprinkler used.
15. Indicate the type and size of pipe.
16. Provide hanger details.
17. Indicate type of fitting used.
18. Use of each room.
19. Location of heat sources.
20. Water flow information including:
    - Flow location
    - Static pressure, psi
    - Residual pressure, psi
    - Flow, gpm
    - Date
    - Time
    - Test conducted by or information supplied by_____.

C. The following notes shall be completed and placed verbatim on the working sprinkler plans:

1. This fire sprinkler system shall be designed and installed in accordance with NFPA 13 and Menlo Park Fire District standards.
2. Only listed and approved devices shall be installed in this system.
3. Only new listed sprinklers shall be employed in the installation of this sprinkler system.
4. A minimum of two spare fire sprinklers of each type, temperature rating and orifice size, along with a sprinkler wrench, shall be located in a spare head cabinet at the system riser or other approved location. If less than three heads of a particular type are used, only one spare head shall be provided.
5. All piping shall be provided with hangers and shall be supported per code and manufacturer's specifications.
6. All piping shall be hung from structure members.
7. Underground mains and lead-in connections shall be flushed before connection is made to sprinkler piping.
8. This fire sprinkler system shall be tested and inspected at both rough and final inspections, prior to occupancy being granted. Call two working days in advance to schedule all inspections.

8. INSPECTION AND TESTING PROCEDURE

A. Welded piping connections shall be inspected before installation.

B. The sprinkler system shall be field tested and inspected at the rough plumbing stage (i.e. exposed pipe and fitting stage) by the Fire Prevention Division. All systems shall be hydrostatically tested (not pneumatic) for leakage at 200 lbs. For existing systems, when 20 sprinkler heads or less are added, a hydrostatic test of 50 lbs. over normal water pressure shall be required.

C. Riser detail showing system split, pressure gauge, check valve, main control valve, relief valve (where applicable), main drain valve.

D. Indicate the manufacturer, model, type, and pump curve of the booster pump (where applicable).

E. All systems shall have an underground flush completed at time of hydrostatic test prior to connecting the underground to the overhead piping.

F. The sprinkler system and all of the related components shall be tested and inspected by the Fire Prevention Division at the final inspection stage, prior to occupancy being granted.

G. At least two spare sprinklers of each type, temperature rating, and orifice size used in the system and a sprinkler wrench shall be provided and located at the system riser.

H. The 5 Year Service Test sticker shall be placed on the riser at the time the sprinkler system is put in service or at the time of final inspection if the system is put in service before final inspection.

9. SCHEDULING INSPECTIONS

A. The inspection fee that is paid at the time of plan submittal will provide two inspections to complete the project (one rough-in and one final inspection). For projects that exceed this limit, inspection requests will not be accepted unless additional fees are paid prior to scheduling an inspection.

B. It is the responsibility of the installing contractor/owner to be on the job site during the inspection with approved plans and the original permit card. Failure to do so will result in the cancellation of the inspection. Cancelled inspections will be counted as one inspection.

C. Inspection requests can only be taken from the installing contractor.

D. Contact Fire District Inspectors at least two business days prior to inspection for scheduling an inspection. Call the inspector of record indicated on the permit card.

E. Inspection times are approximate and may vary because of delays at previous inspections or emergency response by Fire District personnel. Please allow time on either side of the inspection time for the inspector to arrive.