

# FIRE MARSHAL'S OFFICE



# San Mateo County Fire Department

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## Standard Detail and Specification Manual

<b>Section:</b> Fire Sprinkler Systems	<b>Title:</b> Commercial Sprinkler Requirements
<b>Effective:</b> January 1, 2023	<b>Revised:</b> March 21, 2023
<b>Number:</b>	<b>Authorized By:</b> Patrick Griffin, Fire Marshal

### **PURPOSE:**

The purpose of this standard is to facilitate the design, installation, and consistent review of commercial automatic fire sprinkler systems that comply with all applicable codes and standards.

The installation of Commercial Sprinkler Systems shall comply with the following code requirements:

- 2023 San Mateo County Ordinance
- National Fire Protection Association, NFPA 13
- 2022 California Fire Code, Chapter 9 as amended in Chapter 80
- California Code of Regulations, Title 19, Chapter 5.

### **COMMERCIAL SPRINKLER INSTALLATIONS:**

- The sprinkler system shall be designed and installed by a licensed contractor who holds a State of California C-16 (sprinklers) license.
- Contractor requirements specify that a C-16 contractor may only design the system if they perform the entire installation without subcontracting out or any part of the work. If any of the work is subcontracted out, a "Fire Protection Engineer" is required to review the plans designed by the C-16 contractor and take responsible change of them by stamping and signing the drawings.
- A minimum of 6 spare sprinkler heads for each type of system with appropriate orifice size plus wrench, shall be provided in a box located 5-6 feet above floor next to the system riser. Instructions on maintenance shall be provided to the building owner.

**The following areas will be reviewed and evaluated on all submitted plans:**

### **WATER SUPPLY:**

- Minimum water supply.
- Detail of connection to water supply.
- Detail of transition from underground to overhead system

- Materials, detail of penetrations, clearances.
- Hydrant test information.
  - Location and elevation of static and residual pressure in relation to the base of system riser
  - Flow location
  - Static pressure (include. low static of record)
  - Residual pressure
  - Computed flow (in gallons per minute)
  - Date of test
  - Time of test
  - Test conductor by or information supplied by:
  - Circulating dead-end main
  - Pipe diameters and type of material
- System use limited to 90% of available water supply in calculated systems (established by policy).

### **DESIGN CRITERIA:**

- Hazard classification.
- Density & area of sprinkler operation.
- Allowable area coverage per sprinkler head.
- High pile storage of materials:
  - Commodity classification
  - Storage arrangements
  - Density and area of sprinkler operation
- Rack storage of materials:
  - Commodity classification
  - Storage arrangements
  - Density and area of sprinkler operation

### **UNDERGROUND:**

- Valves (including manufacturer, model number, listing as necessary):
  - Provisions for securing from tampering.
- Hydrants (including manufacturer, model number, listing, number, and size of outlets).
- Piping material (including size, type, and manufacturer).
- Fittings (include type, manufacturer, and corrosion protection if required).
- Installation:
  - Joining Methods
  - Thrust blocking or rodding details
  - Depth of cover

### **SYSTEM COMPONENTS:**

- Piping:
  - Materials (include type, manufacturer, listings if required)
  - Sizes (include wall thickness or nominal internal diameter)
- Fittings:
  - Materials (include type, size, listings if required)
  - Locations for required fittings.
  - Details of joining methods (specify if threaded, grooved, welded, etc.)
- Hangers:
  - Materials and configuration (include manufacturer and listing)
  - Locations (include special conditions for high pressures, wrap around, etc.)
  - Fastener details (include type, size, etc.)
- Earthquake bracing:
  - Materials (include manufacturer, model numbers, sizes, engineering)
  - Locations (include lateral, longitudinal, swing joint locations, flexible coupling locations, etc.)
- Drainage:
  - Main drain (include size, specific location of valve, specific location of discharge outside of building)
  - Inspectors test connection (include specific location of valve, specific location of discharge outside of building)
  - Auxiliary drains and flushing connections (include size, location, type of drain fitting involved)
- Valves:
  - Manufacturer, model number, quantities, listings
  - Pressure relief valve(s) on gridded systems
- Sprinklers:
  - Manufacturer, model number, quantities, listings for special conditions or devices
  - Temperature ratings
  - Special conditions or locations (Exterior – Corrosion protected)
- Alarms:
  - Local waterflow (include location, type, weatherproof attributes, etc.)
  - Sprinkler monitoring service (specify if central or remote station, ten heads or more)
- Fire Department Connection:
  - Location (include size, specific location of connection, specific location above finished grade)

#### **SPACING, POSITION, ETC.:**

- Complete construction details (include scaled full height building, cross section showing all soffits, recesses).
- Description of rooms, uses, occupancy.
- Applicable locations for full protection.

#### **HYDRAULIC CALCULATIONS:**

- Summary sheet.
- Detailed work sheets.
- Graph sheet on appropriate semi-log paper.
- Abbreviations and symbols.
- Peaking of gridded systems.
- Most remote (demanding) area.
- Hydraulic reference points.
  - (NFPA 13, Section 29.4.1) is revised per 2022 California Fire Code Chapter 80 Reference Standards, Page 80-15. Approval of Sprinkler Systems- Signs.
  - (NFPA 13, Section 29.4.2) such signs shall be placed at every system riser, floor control assembly, alarm valve, dry pipe valve, preaction valve, or deluge valve supplying the corresponding hydraulically designed area unless the Fire Marshal's Office approves an alternate location.
  - (NFPA 13, Section 29.4.3) is revised per 2022 California Fire Code Chapter 80 Reference Standards pages 8-15, to include sign requirements One through Fourteen (1-14).
  - (NFPA 13, Section 29.6.1) is revised per 2022 California Fire Code Chapter 80 page, 80-15 The installing contractor shall provide a general information sign used to determine the System design basis and information relevant to the inspection, testing, and maintenance requirements required by NFPA 25, Standard for the Inspection, Testing for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2013 California Edition.
  - (NFPA 13, Section 29.2) Sprinkler system acceptance shall meet the requirements of Section 29.2