



Sacramento Metropolitan Fire District

Community Risk Reduction Division

www.metrofire.ca.gov

10545 Armstrong Ave., Suite 310 • Mather, CA 95655 • Phone (916) 859-4330 • Fax (916) 859-3717

SACRAMENTO METROPOLITAN FIRE DISTRICT			
FIRE PREVENTION STANDARD			
STANDARD TITLE:	Installation of Sprinkler Systems		
STANDARD NUMBER:	1	EFFECTIVE DATE:	01/01/11
		REVISION DATE:	01/05/24

SCOPE

This standard is for the design and installation of fire sprinkler systems in commercial buildings and is pursuant to the 2022 California Fire Code, Local Ordinance and the 2022 edition of NFPA 13.

This standard shall apply to all new or modified sprinkler systems in commercial buildings.

GUIDELINES

Guidelines are numbered in accordance with NFPA 13 chapters or sections. Chapters or section numbers missing from this document indicate direct application of that chapter of NFPA 13.

The approved civil submittal water plan sheet, as prepared by the Civil Engineer of record, shall be provided with all sprinkler system submittals required to provide hydraulic calculations.

All fire sprinkler plans shall clearly note on the cover sheet if there is obstructed or unobstructed construction.

All fire sprinkler plans, including modifications to existing systems, shall include a reflected ceiling plan showing all ceiling details.

All new buildings requiring sprinkler protection shall have sprinklers throughout. No building may be partially protected with sprinklers without approval of the Fire Marshal.

Chapter 5 - Water Supplies

1. Underground piping shall be installed in accordance with NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances* and the approved plans prepared by a civil engineer or piping installation contractor. The underground fire service installation contractor shall submit for review and approval a schematic drawing showing the part for part

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- installation arrangement of the underground piping and appurtenances and a parts list with listing information for all parts prior to installation. A trench cross sectional detail shall be included on the plans.
2. Plastic piping approved for underground installations shall be PVC, C900, Class 150 or greater, and be listed for such use.
 3. All runs of non-metallic water pipe shall have a No. 8 gauge solid soft drawn copper locator wire taped on top of the pipe to facilitate locating the pipe at a later date. The wire shall be stubbed up inside each valve box. Continuity test shall be conducted on each splice at all locations.
 4. Non-metallic pipe shall not be used within five feet of a building.
 5. All piping shall be laid in a six inch bed of sand or natural gravel not over one inch in diameter and have a twelve inch fill of sand or natural gravel not over one inch in diameter.
 6. A strand of 3" wide non-detectable blue tape marked "Water" shall be placed 12 inches above all piping.
 7. All sections of ductile iron pipe or ductile iron fittings shall be encased in either 8-mil linear low density (LLD) or 4-mil high-density, cross-laminated (HDCL) polyethylene sheets or tubes in accordance with American Water Works Association Standard C105/A21.5-05, *Polyethylene Encasement for Ductile-Iron Pipe Systems*. Any fasteners shall be made of low-alloy steel.
 8. Concrete thrust blocks or other approved retaining, shall be installed at all locations where piping changes direction.
 9. A 200-PSI hydrostatic pressure test shall be performed on all installed piping and appurtenances for a period of two hours. The piping shall be center-loaded during pressure testing with all joints, fittings and appurtenances uncovered. Failure to comply with this section will result in a test failure and the uncovering of the piping for a visual inspection and retesting.
 10. A fire sprinkler underground supply piping flush, using a full pipe diameter discharge, shall be conducted and witnessed by the Fire District prior to connection to the above ground fire sprinkler system. The fire department connection piping shall also be flushed if connected to the fire sprinkler supply piping below grade. Piping shall be flushed until all foreign objects have been discharged and the water is clear.

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11. A Shared Utility and Maintenance Agreement shall be recorded at the public recorder’s office having jurisdiction and provided to the Fire District for all private fire protection water systems serving multiple parcels or properties. The aboveground, indicating control valves for the private fire service line shall be monitored by all parcels served by the private fire system. A separate aboveground, indicating control valve shall be provided for each fire riser and monitored by the individual parcel or property served. (CFC Section 507.1)

Section 9.4.2 – Temperature Ratings

1. Due to outdoor temperatures exceeding 100 degrees in the Sacramento area, fire sprinklers installed on the exterior of a building shall be intermediate temperature in all new systems and in systems undergoing tenant improvements.

Section 16.1 – Installation of Piping, Valves, and Appurtenances

- 1. System Control Valves
 - A. Multi-floor buildings (two or more stories): Individual floor control valves shall be located within a rated stairway or in the fire control room. Floor control valves shall have a permanent sign identifying areas or systems controlled in ½” letters that contrast with their background and shall be permanently banded to the valve or permanently affixed to a wall adjacent to the valve.
 - B. Sprinkler systems located in special hazard areas (i.e. spray booths, etc.) shall have a separate locked and monitored indicating control valve.

Sections 16.3, 16.11, and 16.12 - Fire Department Connections

- 1. Fire department connections shall be visible, accessible, and installed on the address side of buildings in approved locations, and provided with listed caps and fasteners. Fire department connections shall be installed in approved locations.
- 2. Fire department connections shall be located between 3 and 40 feet from an accessible fire hydrant. The fire department connection and hydrant shall be located on the same side of the access roadway.

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Exception: The fire code official may allow a greater distance between the hydrant and fire department connection; however the distance shall not exceed more than 150 feet.

3. Fire department connections shall be within 2 feet of the curb or back of walkways adjacent to a public street or approved fire access lane. When the fire department connection is part of a back-flow assembly, it shall be located within 15 feet of the public street or fire access lane. Fire department connections shall be installed in approved locations.

Exception: Fire department connections located on buildings.

4. Fire department connections shall not be located within the required fire apparatus turning radius.
5. Fire department connections shall be located free of interference from nearby objects including buildings, fences, posts, trees, etc., and in regard to overhead hazards such as transformers or transmission lines.
6. The fire department connection shall serve only one building.

Exception: Mini-storage facilities, new public schools, and R-2 apartment houses located on a single parcel may have a fire department connection that serves more than one building.

7. Address numbers are required on the fire department connection to indicate the area or building served. Minimum 2" numbers that are contrasting in color and all-weather shall be located on the fire department connection facing the public street or fire access lane.
8. Fire department connections located on a back-flow assembly shall be installed in a manner approved by the Fire District and the local water purveyor.

Section 18.1 and 18.5 - Protection of Piping Against Damage Where Subject to Earthquakes

1. For all new sprinkler system installations, a completed copy of the Structural Attachment Compliance Letter (attachment 1) shall be provided upon plan submittal.

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2. The ground motion parameter S_s shall be obtained through the U.S. Geological Survey.

Chapter 28 - Fire Pumps

1. Fire pumps shall be installed in accordance with NFPA 20, *Standard for the Installation of Stationary Fire Pumps for Fire Protection*.
2. A fire pump shall serve only one building.

Exception: Fire pumps serving a private development (campus), on a single property under one ownership, in accordance with California State Fire Marshal Interpretation 16-005.

3. A fire pump shall have a by-pass line installed.
4. If a test loop is provided, listed control valves with normally closed tamper switches or other approved tamper switches shall be installed. In addition to the test loop, a method of flowing water every three years in accordance with the latest edition of NFPA 25, *Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems* shall be provided.

Chapter 29 - System Acceptance

1. Inspections: A new fire sprinkler system requires the following inspections that are included in the original permit fee. Fees for additional inspections shall be paid prior to scheduling the inspection.
 - A. Weld inspection. Required for all piping with welded outlets prior to the piping being installed.
 - B. Installation inspection of all piping, sprinklers, hangers, seismic bracing, etc. and hydrostatic testing.
 - C. Final inspection including any previously noted corrections.
2. Completed copies of the contractor’s material and test certificates for the underground and aboveground piping shall be provided.

The information below is to be completed and reproduced on the structural engineer's letterhead and included with the fire sprinkler plan review submittal package. Wet stamp and wet signature are required.

STRUCTURAL ATTACHMENT COMPLIANCE LETTER

Project Address: _____

Project Name: _____

This building has been designed for a fire sprinkler system with an equivalent weight of _____ pounds per square foot over the entire roof area. This load was used for the design of both gravity and seismic lateral resisting systems. Our review of the structural drawings by _____, dated _____, and fire sprinkler drawings by _____, dated _____, determined that the loading, methods of attachment of the hangers and seismic bracing and the location of the attachment for the hangers and seismic bracing are in conformance with structural design requirements, the truss manufacturer's requirements and the most current Edition of National Fire Protection Association Standard 13. The fire sprinkler contractor shall be responsible for installing the fire sprinkler system per the above-mentioned drawings.

Sincerely,

Signature: _____

Print Name: _____

Date: _____

Engineering Stamp: