

**Moreno Valley Fire Department  
Fire Prevention Bureau**

**Commercial (NFPA 13)  
Fire Sprinkler Systems**



Approved and Authorized By:

Doug Bloom, Fire Marshal

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# Commercial Fire Sprinkler Systems

## PURPOSE

This guideline has been prepared to assist those responsible for the design, installation, testing, and inspection of fire sprinkler systems to comply with 2022 NFPA 13; 2022 California Fire/Building Code Chapter 9, Section 903 and the Moreno Valley Municipal Code.

## SCOPE

This guideline applies to any fire sprinkler systems for commercial buildings. This guideline defines the requirements to obtain a permit for any new or existing fire sprinkler systems for plan submittal requirements, testing, and Fire Department notes required to be applied onto plan

## SUBMITTAL REQUIREMENTS

Submit your digital plans through the City of Moreno Valley's [SimpliCITY](#) portal. Plans shall be scaled, complete technical data sheets/manufacturer's specifications, and a copy of the manufacturers' design and installation requirements. Fees are based on the number of fire sprinkler heads installed. These plans shall contain the following information and items:

1. **Scope of work** for the project.
2. **Business/ Contractor Information** shall be provided and include: job site name, address, owner's contact name, owner's phone number; submitting company's name, address, contact name and number.
3. **Plan Design Statement** shall state: These plans have been designed in accordance with NFPA 13 (2022 edition), 2022 California Fire Code, and 2022 California Building Code, Moreno Valley Municipal Code, and the manufacturers design and installation requirements.
4. **Contractors License and Certifications** shall be provided and include a current contractor's C-16 license and signature on the plans
5. **Material Listings** shall be incorporated into the system design in accordance with NFPA 13.
6. **Site Plan** indicating proposed building site layout and underground fire service main piping with hydraulic node points (referenced from hydraulic calculations) from fire flow test location to fire sprinkler system's point of connection.
7. **Basic Working Plan Requirements** indicating the building dimensions, cross section views, the location of partitions and other pertinent information detailing proposed structure layout.
8. **Floor Plan** detailed floor plan indicating fire sprinkler riser location, system mains, branch lines, fire sprinkler head locations, location of methods of restraint, changes of elevation, node point identification and most remote calculated area(s.)

9. **Fire Sprinkler Riser Detail** showing valves, flow switch, gauges, couplings, and connections. Riser shall be provided with a main drain that will permit flow tests of water supplies, connections, and be sized as follows: up to 2" riser(3/4" or larger), 2-1/2"(1-1/4" or larger), and 4" and larger (2" only). Applicable node identification from hydraulic calculations shall be provided for reference.
10. **System Mounted Fire Department Connection** (if applicable) shall be provided on riser detail. Connection to fire riser shall be provided above system check valve and will not be allowed to be installed at rear of any structure. Connection's inlet height shall be no less than 18" or more than 48" above grade. FDC also be installed within 20' to 100' from an approved fire hydrant. Connection(s) shall be provided and sized in accordance with NFPA 13. Disregard if FDC is a separate from fire sprinkler system design.
11. **Required Valves** shall be shown on the plans. Valves required include main drain, inspector's test valve that will allow the testing of the system bell, auxiliary drain valve(s), and air valve.
12. **Water Supply Information** from applicable fire flow test used for system design indicating static, residual, and flow values on water purveyor's letter. All water supply testing and documents are to be no more than 6 months from time of submittal. No more than 90% of the available water supply shall be used for any fire sprinkler system's design.
13. **Equipment Legend** for each system component shall be identified to be reflected on floor plan. Legend shall include all system sprinklers (new, relocated, and/or removed) hangers, end of line restraints, valves, connections, and seismic sway bracing.
14. **Hydraulic Calculation Plate** example shall be provided for each calculated area. Information shown on plate shall reflect information shown in CFC Chapter 80 NFPA 13 amendments and hydraulic calculations.
15. **Hanger/End of Line Details** shall be provided to indicate a listed method of attachment onto structure. Details shall indicate all hanger manufacturer's listed parts onto the building's wooden or steel structure attachment.
16. **Sway Bracing Details and Calculations** shall be provided on the plans for lateral and longitudinal sway bracing. Details indicating sway bracing components, part numbers, minimum and maximum allowable angles. Details shall also include method of proposed sway bracing's of attachment to the structure (through-bolt or all-thread.) shall be included on plans. Sway bracing calculations shall in accordance with Chapter 18 of NFPA 13 and shall indicate site's  $C_p$  value to determine sway brace loads with credible source, maximum spacing between braces, maximum pipe length, and pipe schedule used installation.
17. **Fire Sprinkler Head Installation Details** shall be provided for any special clearance considerations for field inspection staff. For systems equipped ESFR sprinklers, non-obstructed construction, and/or open web trusses with non-obstructed construction a side view details showing minimum and maximum distance requirements shall be provided.
18. **Design Area Reductions/Increases** shall be specifically detailed on the plans and shall include the section in code for the modification.

19. **Hydraulic Calculations** shall be prepared for each individual hydraulically calculated area. Each set of calculations shall include a summary sheet, graph sheet, water supply analysis, node analysis, and detailed worksheet. Outside house demands in accordance with NFPA 13 shall also be applied onto calculations.
20. **Data Specification Sheets** indicating required listings in accordance with NFPA 13 shall be provided for all fire sprinkler heads, piping, fittings, hangers, braces, valves, couplings, assemblies shall be provided for review. Pertinent flow information to determine validity of hydraulic calculations shall be provided for applicable components.
21. **Pre-Action Systems** shall be required to have listed pressure gauges above and below pre-action valve. Valve room shall be lighted and heated with permanent hearing device. System of 500 gallons or fewer shall not be required to meet any specific water deliver requirements to the test connection. All others shall be designed to deliver water to the system test connection within 60 seconds. The pitch for a pre-action system shall include a ¼ " per 10 ft. for mains and ½ " per 10 ft. for branch lines. For double interlock systems, a trip test connection or manifold not less than 1 in. in diameter, terminating in a smooth bore corrosion-resistant orifice to provide a flow equivalent to one sprinkler of a type installed. The test connection shall be at the end of the most distant pipe

### **TESTING REQUIREMENTS**

1. **Weld Inspection** shall be conducted by the Fire Prevention Bureau when pre-fabricated piping is installed. All welding inspections are to occur before any welded system components are installed. Welding certificates shall be prepared and current at time of inspection for Fire Inspector's review
2. **Overhead Rough/Piping Inspection** shall be conducted before the Concealment of any construction or piping and other required testing by Fire Prevention Bureau Staff.
3. **Hydrostatic Testing** of Wet pipe fire sprinkler systems shall be tested at 200 psi or 50 psi above static operating pressure which ever is greater for a 2 hour duration. Loss of any pressure for hydraulic or pneumatic tests will result in a failed inspection.
4. **Pneumatic Testing** shall be performed for double interlock and dry fire sprinkler systems at 40 psi for 24 hours. Loss of any pressure for hydraulic or pneumatic tests will result in a failed inspection. Pre-action systems shall undergo automatic operational testing and trip testing as necessary.
5. **Fire Sprinkler Final** shall be subject to main drain testing and exercise of the inspector's test valve to verify actuation of system flow switch/water motor gong, and bell. At time of final inspection, all required fire sprinkler head trim/escutcheons shall be installed and all protective covers shall be removed.

### **FIRE DEPARTMENT INSPECTION AND TESTING NOTES**

Fire Department Notes for Fire Sprinkler Systems are required to be added to plans verbatim.

1. **Welding Certifications** shall be provided onsite for Fire Prevention Bureau Staff's review for all required welding inspection(s.)

2. **System Testing** shall be performed in accordance with NFPA 13 and Moreno Valley Fire Prevention Bureau Guideline requirements. Concealment of any construction or piping shall not be permitted until system has undergone overhead rough piping and other required testing by Fire Prevention Bureau Staff.
3. **Spare Sprinkler Box** with appropriate number of heads and wrenches shall be provided at Final Inspection. There shall be no fewer than 6 heads for <300 sprinklers installed, 12 heads for 301-1000 sprinklers installed, and 24 heads for 1001 or more sprinklers installed. There shall be no less than at least 2 of each type of sprinkler installed in the system.
4. **Maintenance Access** shall be provided for all combustible concealed spaces protected with fire sprinkler coverage to fulfill required inspection, testing, and maintenance in accordance with NFPA 25.
5. **Identification of Valves** shall be completed for all control, drain, test, and auxiliary valves with permanently marked weather proof or rigid sign.
6. **Electric Valve Supervision** shall be provided for all valves controlling water supply to sprinkler system by a listed fire alarm control unit to a UL listed central station. All valves required to be monitored will need to be tested before system's commissioning is approved.
7. **Securing of Control Valves** – All valves controlling water supply to sprinkler system shall be secured in the open position by approved means.
8. **Connection to Underground Piping** shall be allowed once underground piping has been flushed and witnessed by Fire Prevention Bureau Staff.
9. **“As-Builts” or Revised Plans** shall be submitted and reviewed by the Moreno Valle Fire Prevention Bureau prior to Final Inspection according to field inspection changes and Fire Inspector's discretion.
10. **Owner's Information** shall be provided by installing contractor to building's owner at or before Final Inspection. A copy currently adopted edition of NFPA 25 and literature/instructions provided by manufacturer shall be provided to building owner.
11. **Contractor's Materials and Test Certificate** shall be completed by the installing contractor before system's final inspection is requested.

**For additional assistance please call Fire Prevention at (951) 413-3370 or Email us at [FirePlanCheck@Moval.org](mailto:FirePlanCheck@Moval.org)**

**To submit plans please use the [SimpliCITY](#) portal.**