



Sprinkler System Installation Policy

Chapter 9 of the 2003 MN State Fire Code is amended by adding the following:

Application Submittal:

1. A Sprinkler Permit Application may be either picked up from the New Hope or Crystal city offices or downloaded from the District Web site. Submit application and full plans to the proper city and they will forward the plans to the Fire District.
2. Submittal shall include a minimum of three (3) sets of sprinkler plans, specifications, and hydraulic calculations for review by West Metro Fire-Rescue District.
3. Plans submitted for review shall be drawn to scale size large enough so that details on pipe size, pipe lengths, riser nipple pipe size/lengths, sprinkler head symbols, hanger details, building construction features, and fire sprinkler obstructions are clearly legible. A legible scale shall be used. A preferred scale is 1/8th inch=one foot.

All submittals shall be in compliance with the requirements of the adopted edition of NFPA 13 for working plans. Each item in the list shall be shown on the plans.

4. Adequate, concise, and sufficient information shall be clearly indicated on the plans to review the system design and occupancy information. This may include submitting details on racking systems, hazardous materials, soffits, equipment schedules, etc. The specific edition of NFPA 13 shall be documented on the plans. System design criteria and classification may be reviewed by West Metro Fire-Rescue District prior to system design.
5. Any material/installation deviation from approved plans will require approval by one of the Fire Prevention Staff. All changes shall be followed up in writing on company letterhead. Revisions are to be clouded and shall be submitted before the Certificate

of Occupancy can be signed off by Fire Prevention Staff.

Issuance of Permit:

1. After plans are reviewed by the Fire Prevention Staff, a permit will be issued. You will receive one (1) copy of the approved plans for your use.
2. Permits will be issued by the City within which application was made.

System Components and Hardware Required:

1. A control valve will be required on all flammable storage rooms, hazardous materials storage rooms, spray booths, hoods, atriums, and other locations involving special considerations.
2. All systems shall have tamper switches (supervisory) on all valves and for preaction and dry systems include low air pressure switches.
3. Three options for indicator valves are as follows: A) A yard post indicator valve: which may only be used if the riser will be located below grade. B) A wall post indicator valve used when there is no direct access (which location shall be approved by the Fire Prevention Staff). C) A one-hour fire resistive construction protecting the fire sprinkler room with exterior access, drain, emergency light pack, and a sidewalk to public way.
4. The exterior water flow alarm shall be located above the fire department connection. The flow alarm shall be of the audible and visual type. The outside horn/strobe shall only sound when water is flowing.

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Design Criteria:

1. Fire protection systems that are hydraulically calculated shall have a minimum of 5-PSI safety factor at maximum system flow.
2. Water flow data used for hydraulically calculated fire protection systems shall be less than three (3) years old.
3. A by-pass meter is required on all sprinkler systems in the City of Crystal.
4. In buildings that are four (4) or more stories in height shall be zoned by floor. Birdcage (vertical riser) design is not acceptable on buildings four (4) stories or more in height.
5. The fire department connection and wall post indicator valve shall be installed at 18-48 inches above finish grade.
6. The fire department connection shall be located as designated by the Fire Prevention Staff.
7. The fire department connection shall be labeled as to the system it supplies, i.e., automatic sprinkler or standpipe, or automatic sprinkler and standpipe.
8. When hose connections and hose racks and reels are required by Fire Code, the Fire Prevention Staff shall require deletion of these with the substitution of Class I standpipes located at exits as equivalent protection. The Fire Prevention Staff shall approve where the hose connections will be located.

In apartment buildings where the horizontal travel distance is over 100 feet, West Metro Fire-Rescue District shall required standpipes every 100 feet to ensure that fire fighters can reach each unit.

9. When performance-based design is utilized, it shall be the responsibility of the designer to supply sufficient information to the Fire Prevention Staff to review all the design criteria and parameters. All reference materials (i.e., SFPE Handbook, articles, procedures, etc.) shall be provided at no cost to the District. Sufficient information shall be provided to the District to review and approve the company or individual conducting the peer review. Adequate and permanent records shall be kept of the system

designs, all meetings and all correspondence and any modifications.

10. NFPA 13D system will require a flow alarm consisting of an audio and visual device mounted on the exterior of the dwelling.

Sprinkler Requirements for Residential Properties: (R-1 and R-2, and R-3 occupancies)

Occupancies with 8,500 or more gross square feet of floor area or dwelling units or guest rooms on three or more floors; and attached R-3 occupancies and townhouses built to the International Residential Code with 8,500 or more gross square feet of floor area. All floors, basements, and garages are included in this floor area threshold.

1. Provide a District approved Dama key lock box for fire department access if a fire sprinkler riser room is provided. For units that have a 13D system installed with waterlines directly from the exterior of the building, a lock box is not required.

General Requirements:

1. The maximum height of indicating control valves shall not exceed six (6) feet. All gauges shall be easily readable from the floor.
2. All indicating control valves and sprinkler riser shall have permanent signs identifying the area and the design criteria of the building that is controlled by that particular valve or sprinkler riser.
3. Underground test certificates shall be reviewed by the sprinkler contractor prior to connection of the overhead piping, and the contractor shall be responsible for ascertaining that the water main has been flushed before connecting to the riser.
4. All indicating control valves, including the P.I.V., must be provided with a tamper switch. The P.I.V. must have a lock on it prior to occupancy of the building
5. Monitoring of the sprinkler system shall be in service prior to testing the sprinkler system.
6. Zone maps shall be posted next to the



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sprinkler riser and fire alarm panel for all systems. A copy shall be submitted to the Fire District for approval. A permanent sign shall identify each riser, correlating with the zone map. The zone map shall be in a frame or mounted, or may be laminated with rings attached and hung on the wall, or by other approved means. The zone map shall be readable and clear. (Sprinkler plans are not acceptable as a zone map). The zone map shall show the general location of each zone, special sprinkler heads that are used, FD connection, PIV, WPIV, riser controls, inspector test, other system control valves and auxiliary drains. A North symbol shall be included on the plan. When system are remodeled, extended, altered, or modified, the existing zone map(s) shall be updated.

7. All buildings required to have a sprinkler systems, but not required to have fire alarm systems shall have horns and strobes located throughout the inside of a building and/or all tenant spaces. The horn(s) and strobe(s) shall activate upon water flow alarm of the sprinkler system. The horn(s) and strobe(s) shall be located in an area continuously occupied during working hours to ensure that audible public mode signals are clearly heard, they shall have a sound level at least 15 DBA above the average ambient sound level or 5 dBA above the maximum sound level.

Tests Required:

A. *Wet System tests:*

1. Two-hour hydrostatic of the entire system is required.
2. Test retard setting with the inspector's test. The water flow switch shall be set between 30-45 seconds.
3. Main drain test shall be completed.
4. Fire Prevention Staff shall witness all tests. A minimum of a 24-hour notification is recommended.
5. At the end of testing, the Contractor's Material & Test Certificate for Above ground Piping shall be provided to the Fire Prevention Staff.
6. When modifications involving 15 or more sprinkler heads, or any major modifications or repairs, a hydro test at 50-PSI over normal static pressure for 2 hours, is required.

B. *Dry System tests:*

1. 24-hour air test at 40 psi.
2. Dry valve trip test:
 - a. Systems containing more than 750 gallons-water to flow from inspectors test in not more than 60 seconds, starting at the normal air pressure on the system and at the time of fully opened inspection test connection. Accelerators and/or exhausters will be required if the 60-second requirement is not met.
 - b. Systems with 500-750 gallons-water to flow from the inspectors test within 60 seconds without an accelerator or exhauster. No limit is required if an accelerator or exhauster is provided. The Contractor and Fire Prevention Staff shall:
 - i. Record the time it takes for the valve to trip after opening the system test valve.
 - ii. Record the air and water pressures before the test.
 - iii. Record the air pressure at trip point.
 - iv. Record the delivery time for water to reach the test outlet.
 - v. Record whether the alarms operated properly.
3. Main drain test.
4. Fire Prevention Staff shall witness all test, a minimum 24-hour notification is recommended.
5. Low air pressure must be monitored by a central station.
6. Compressor must be hard wired without shut-off switches.
7. At the completion of testing, the Contractor's Material & Test Certificate for Above ground Piping shall be provided to the Fire Prevention Staff.

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