

## **FIRE SPRINKLER SYSTEMS**

(2020 MSFC)

### **Code Reference – MSFC Section 903 – Automatic Sprinkler Systems**

See **903.1 General**. *Automatic sprinkler systems* shall comply with this section.

**903.1.1 Alternative protection.** Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard and *approved* by the *fire code official*.

See MSFC Sections 903.1 through 903.6 for additional requirements.

The City of Shakopee has adopted MN State Building Code Chapter 1306. This chapter amends the thresholds for when fire sprinklers are required.

### **Underground**

#### **General Requirements**

1. Refer to the handout for Underground Piping.

### **Aboveground**

#### **General Requirements**

1. Permits are required for all aboveground sprinkler work. Permit applications and plan review submittals are made through our online process at <https://www.shakopeemn.gov/ePortal>. No paper plans are accepted.
2. Early work authorization will be provided upon receipt of a permit application to the Shakopee Fire Department. **No work shall be started without an early work authorization.** Failure to apply for a permit prior to commencement of work will result in an investigation fee being added to the base permit fee in accordance with City of Shakopee Fee Schedule.
3. All systems shall be designed and installed in accordance with the current adopted or approved edition of the NFPA requirements for fire sprinkler systems.
4. All submittals shall include specification sheets for all components of the system. All plans shall include the elements contained in NFPA 13, NFPA 13R or NFPA 13D for submittal of working plans.
5. All equipment installed in a fire protection system shall be UL Listed, Factory Mutual Approved or listed by a nationally recognized organization acceptable to the Shakopee Fire Department.

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6. Backflow prevention shall be provided on all fire service water supplies.
  1. On systems without chemical additives a double check valve backflow prevention assembly including a fire detector water meter shall be installed. The assembly shall meet AWWA 510 standards. The meter shall be purchased from Shakopee Public Utilities or be an equivalent model. The assembly shall be hydraulically balanced to provide meter operation upon any water use through the service. The water meter shall be installed horizontally, and all piping shall be galvanized or brass. The bypass meter shall also have a testable double check valve or RPZ.
  2. On systems which do contain chemical additives an RPZ backflow preventer shall also be installed
7. All control valves, including post indicator valves, shall be monitored and provided with tamper protection.
8. All new sprinkler systems shall be monitored. Monitoring shall be in accordance with the handout on Fire Alarm Systems.

**Exception:** Limited area sprinkler systems complying with Section 903.3.8.
9. Class III standpipe systems shall be installed throughout buildings where the floor level of the highest story is located 20 feet or more above the lowest level of fire department vehicle access, or where the highest story is located 3 or more stories above the lowest level of fire department vehicle access, or where the floor level of the lowest story is located 20 feet or more below the highest level or fire department vehicle access. The level of fire department vehicle access shall be considered the first story.
10. A strobe and horn shall be placed above the Fire Department Connection (FDC). The horn and strobe assembly shall be mounted at 120 inches +/- above finished grade.
11. The Fire Department Connection (FDC) shall be located on the street (i.e. address) side of the building, other locations may be approved by the Shakopee Fire Department. The FDC shall be installed at a height of 42 inches above finished grade and shall be a minimum of 10 feet from any electric or gas meters and any electrical transformers. The connection shall be labeled as to the system it supplies.
12. The FDC shall be provided with metal or plastic screw-in type caps or aluminum breakaway caps. Plastic breakaway caps are not allowed. 2 additional caps of any style except plastic breakaway shall be provided to the property owner.
13. A reflective sign with a minimum size of 12" x 18" stating "Fire Department Connection" shall be placed within 1 foot of the FDC or as approved by the Shakopee Fire Department. Refer to the handout for Signage Specifications for additional information.

14. Where possible sprinkler riser rooms should have a door to the exterior of the building. This door shall be labeled 'Fire Access' in a block typeface with a minimum height of 4" of contrasting color to the door. The exterior door shall also be provided with the building address numbers in a block typeface with a minimum height of 4" of contrasting color to the door. Refer to the handout for Signage Specifications for additional information.

**Exception:** Access from an intervening area is allowed with approval of the Shakopee Fire Department. When access is allowed from intervening areas all doors leading to the sprinkler riser room shall be labeled with 'Fire Access' as required above.

15. Buildings two (2) or more stories in height shall be provided with shut-off valves and water flow devices for each floor.
16. Fire protection systems that are hydraulically calculated shall have a 5-psi safety factor at maximum system flow.
17. Main drains and inspector test connections shall be piped to exterior atmosphere.
18. Water flow data used for hydraulically designed fire protection systems shall be less than 3 years old. Additional water flow tests may be required in areas where substantial development has occurred since the most recent flow data was collected.
19. Acceptable water supplies for sprinkler systems are listed in NFPA 13. Swimming pools, ponds and fire department connections and/or fire department apparatus are not acceptable as a reliable automatic water supply.
20. Pressure, suction and gravity tanks shall be sized per the requirements contained in NFPA 13 and NFPA 22. The duration of the water supply shall match the hazard classification of the occupancy. Tanks shall be listed by an appropriate organization and shall be acceptable to the Shakopee Fire Department.
21. The maximum size of the domestic water supply (including lawn sprinkler systems) on combination fire sprinkler/domestic water supply lines shall not exceed 1/4 size of the main water supply.

- Exception:**
1. The maximum size of the domestic water supply may exceed 1/4 the size of the main water supply if an electric solenoid valve is installed on the domestic side of the service (including lawn sprinkler systems). This valve shall be normally powered open and shall close on loss of electric power or signal from the automatic fire sprinkler system flow indicator.
  2. The maximum size of the domestic water supply may exceed 1/4 the size of the main water supply if the domestic service (including lawn sprinkler systems) usage can be designed into the hydraulic calculations for the automatic fire sprinkler system.

22. Sprinkler systems designed for multiple use areas including, but not limited to; gymnasiums, ice rinks, sports arenas, cafeterias 350 square feet or larger and multi-purpose rooms 350 square feet or larger shall be designed for Ordinary Hazard Group II due to the type of use or to the use of these facilities for other purposes including craft shows, flea markets or community sales.
23. The Shakopee Fire Department shall witness all system tests required by NFPA 13, NPFA 13R or NFPA 13D. Appointments can be made by calling the Shakopee Fire Department at 952-233-9570 between the hours of 8:00 am and 4:30 p.m., Monday through Friday. Please arrange tests at least 24 hours in advance. Signed copies of the "Contractor's Material and Test Certificates" for aboveground piping shall be provided to the Shakopee Fire Department upon job completion.
24. All signage as required by the appropriate NFPA Standard the system was designed to shall be provided.

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25. Zone maps shall be posted next to the sprinkler riser for all systems. A copy of said maps shall be submitted to the Shakopee Fire Department for approval. A permanent sign shall identify each system riser and shall correlate with the zone map. An acceptable zone map shall include the following information:
- a. Minimum size of 8-1/2" x 11" and shall be clear and legible
  - b. Framed and mounted or protected by other acceptable means
  - c. Simplified floor plan map showing location of FDC, PIV, riser controls, inspectors test, other system control valves, auxiliary drains and location of special heads.