

**MCKINNEY FIRE DEPARTMENT
FIRE MARSHAL'S OFFICE**

AUTOMATIC FIRE SPRINKLER SYSTEMS

These guidelines are to be followed when a business, facility or organization installs an automatic fire sprinkler system within the City of McKinney. This document shall assist in the preparation design documents for review and permit. These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.

PERFORMANCE AND INSTALLATION REQUIREMENTS

1. Unless specifically allowed by the 2015 International Fire Code or the 2015 International Building Code, residential sprinkler systems installed in accordance with NFPA 13D or NFPA 13R shall not be recognized for the purposes of exceptions or reductions, commonly referred to as "trade-offs", permitted by other requirements of this code. When an exception is taken for the use of a sprinkler system under Chapter 5 of the 2015 IBC to increase the building size, only an NFPA 13 sprinkler system shall be permitted.
2. Residential sprinkler systems installed in accordance with NFPA 13R, shall include sprinkler protection throughout the attic, patios, balconies and breezeways.
3. An automatic sprinkler system shall be installed throughout all buildings over 6,000 sq. ft., unless otherwise directed herein. For the purpose of this provision, firewalls shall not define separate buildings.
4. An automatic sprinkler system shall be installed throughout all A-2 occupancies over 5,000 sq. ft., or for any area of an A-2 occupancy in which the occupant load exceeds 100 persons, and as required by the 2015 IFC.
5. When determining the requirement for sprinkler protection, the total area under any roof overhangs, canopies, projections, or other permanent vertical structures, beyond that of the building footprint, is include the total area determination. EXAMPLE: A proposed building area is 5,800 sq. ft. Multiple canopies are indicated to cover the entrances. The total square footage of the canopies is 300 sq. ft. The total building area is calculated as: 5,800 sq. ft. + 300 sq. ft. = 6,100 sq. ft. Therefore this building would require an automatic sprinkler system.
6. All I, H & R occupancies shall be protected throughout with an automatic sprinkler system, regardless of total square footage.
7. Any building exceeding 6,000 sq. ft. that has an inside clear height in excess of 12 feet, making it possible to be used for storage in excess of 12 feet, shall be considered to be high-piled storage and shall comply with the provisions of this section. When a specific product cannot be identified, a fire protection system shall be installed for Class IV commodities, to the maximum pile height.
8. All Group R occupancies shall be provided with sprinkler protection on balconies, regardless of construction, with the exception of R-3 detached single family homes.
9. Automatic sprinkler systems shall be designed with a minimum 10 PSI safety factor.
10. Automatic Sprinkler System Room Access. Sprinkler system risers providing protection for buildings with multiple tenant spaces must be located in a ground floor room directly accessible from the exterior. The door must be labeled as the riser room. Buildings with single tenants may access the riser location from the interior of the building.
11. Riser Room Size. All fire sprinkler riser rooms shall be a minimum of 36 sq. ft., with no dimension less than 6 ft., and shall be large enough to accommodate maintenance and testing actives.
12. Sprinkler systems for all strip retail centers, multiple tenant buildings, speculative warehouses, or any other multiple tenant building, regardless of ceiling height, shall be designed to provide a minimum of Ordinary Hazard Group 2.
13. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems and standpipe systems, with the exception of fire department hose connections, shall be electrically supervised.
14. Approved, supervised, indicating control valves shall be provided at the point of connection to the riser on each floor in all high-rise buildings and all buildings more than one (1) story in height.

AUTOMATIC SPRINKLER SYSTEMS

15. An approved, audible/visual device shall be connected to every automatic sprinkler system.
16. An approved, weatherproof, audible/visual device shall be provided on the exterior in the area of the Remote Fire Department Connection (FDC), if required by the Fire Marshal, or his designee.
17. The Remote Fire Department Connection (FDC) shall be adjacent to a fire hydrant. The minimum separation distance shall be 6 ft. from the face of the fire hydrant to the Remote FDC. *See Remote FDC Guideline for additional.*
18. The FDC must be located along the side of the building adjacent to the fire lane, unless otherwise approved by the Fire Marshal's Office. *See Remote FDC Guideline for additional.*
19. The FDC shall be clear and unobstructed with a minimum of a 3 ft. clearance around the FDC, no higher than 48 in. above grade, and a clear path. *See Remote FDC Guideline for additional.*
20. Inspector test connections, drains, and ball-drips shall be piped directly to the exterior.
21. Riser rooms shall be permanently heated, and such heating appliances shall be hard-wired to the building electrical distribution system. Heating devices shall not be provided with an on/off switch.
22. All inspectors' test, ball-drips, and main-drains shall be piped directly to the outside of the building.
23. At least one inspection test valve (ITC) shall be located at the remote system area for each system. It is allowed to install the ITC at the riser assembly; however, the remote location is preferable.
24. Dry-system air compressors shall be hard wired.
25. Pre-action system solenoids shall be wired for alarm activation upon AC current loss.
26. The Fire Department may approve alternate methods and material.

SELF-SERVICE STORAGE FACILITIES

27. An automatic sprinkler system shall be installed throughout all self-service storage facilities. A screen shall be installed of not less than one (1) inch or greater than six (6) inches in size. The screen and its supports shall be installed such that all elements are at least eighteen (18) inches below any sprinkler heads to restrict storage above that level.

STANDPIPE SYSTEMS

28. Standpipe systems shall be installed in accordance with this section and NFPA 14. Manual dry standpipe systems shall be supervised with a minimum of 10 PSI and a maximum of 40 PSI air pressure with a high/low alarm.
29. Class I standpipes shall be required on all occupancies in which the distance from accessible points for the Fire Department ingress to any point in the structure exceeds two hundred fifty feet (250') along the route that a fire hose laid as measured from the fire lane. When required by this Code, standpipe connections shall be placed adjacent to all required exits to the structure and at two hundred (200') intervals along major corridors thereafter.
30. A fire pump shall be installed to provide for the necessary standpipe water supply as outlined in Information Notice 2008-07, or as required by the Fire Code or Fire Marshal.
31. In addition to the required standpipe calculation, and additional FDC calculation shall be provide to indicate the standpipes can be fed solely by the FDC. An inlet flow and pressure of 1500 GPM and 150 PSI shall be used.
32. Hose valves shall have a 2 ½-inch outlet cap with a 2 ½-inch to 1½-inch reducer with cap and chain.
33. A full flow test will be required for all standpipe system at the approved designed flow and pressure in order to verify the hydraulic calculations, as directed in Information Notice 2014-01.

BACKFLOW PREVENTION DEVICES

34. All fire sprinkler systems are required to be provided with an approved method of backflow prevention.
35. The City of McKinney Building or Engineering Department shall determine the final location of the backflow assembly. As a general rule, if the fire service lead-in is less than 100 ft. in total pipe length, the assembly may

AUTOMATIC SPRINKLER SYSTEMS

be located within the riser room. If the fire service lead-in is more than 100 f.t in total length, the assembly must be located in a below grade vault adjacent to the tap top the circulating main, preferable in an easement. Contact the Engineering Department for requirements pertaining to backflow protection.

36. A reduced pressure zone (RPZ) backflow prevention device is required on antifreeze systems.
37. Assemblies shall be listed for fire protection use and in the orientation installed.
38. Assemblies must be capable of being electronically or mechanically monitored.
39. Assemblies must be provided with a *metered* bypass.
40. In accordance with NFPA 13, a method to perform a forward flow test at the system demand shall be provided downstream of the backflow prevention assembly. The following are examples of acceptable methods.
 - a. Install 2-½ in. standpipe outlets system side of the back-flow device. If the building is provided with standpipe outlets, these would be considered an acceptable method.
 - b. Provide a test header, similar to those on a fire pump. If the building is provided with a fire pump, the fire pump test header is considered an acceptable method.
 - c. A single 2-½ in. outlet is considered to flow 250 GPM.

SIGNAGE REQUIREMENTS

41. A fire protection signage shall be provided as outlined in IFC Section 511. Reference the signage guidelines for additional information regarding sign materials, size and locations.

To expedite the plan review and inspection processes, please refer to the information listed below.

PERMITTING REQUIREMENTS

42. Provide a written description of the work to be performed.
43. Faxed plans submittals will not be accepted.
44. A "Wet" RME signature and stamp, as required by Article 5-43.2, Section 34.717, is required on all plan drawings and calculations.
45. Plans shall be clear and legible and all sheets shall be in a common and appropriate scale.
46. A minimum of three (3) sets of plans shall be submitted. Plans shall contain sufficient detail to enable the plan reviewer to accomplish a complete review. The following information shall be provided on the plans;
 - a. Floor plan.
 - b. Square footage.
 - c. Location of doors.
 - d. Intended use of each room is identified.
 - e. North arrow provided.
 - f. Location of the Remote Fire Department Connection (FDC).
47. Occupancy classification.
48. Scope of Work.
49. Site plan to include the all fire hydrants, fire lanes, fire department connections and the fire service lead-in.
50. Equipment List.
51. Hydraulic calculations for each design area.
52. A minimum of one (1) set of data specifications sheets for all equipment shall be provided.
53. Specific materials in the specification booklet are to be identified by an arrow or highlighter.
54. A complete full-height cross section of the building.
55. Area of coverage of each sprinkler head.
56. Total area protected by each system.
57. Capacity of the dry system or antifreeze system.
58. Hydraulic node symbols and schedule.

AUTOMATIC SPRINKLER SYSTEMS

59. Indicate all Riser Nipples (RN) or Drop Nipples (DN).
60. Elevations of sprinkler lines and node points.
61. Hanger details.
62. Hanger locations.
63. Sprinkler riser diagram.
64. Inspectors test connection detail.
65. Auxiliary drain details.
66. Size and location of standpipe hose stations, if applicable.
67. Graphical scale.
68. Description of the design area.
69. Design density of each design area.
70. Clearly indicate each remote area.
71. Provide graphic representation of the waterflow analysis.
72. Provide the water supply test information.
73. Provide notes to indicate the following;
 - g. Design code.
 - h. Responsible party with regards to freeze protection. If to be provided by others, indicate and provide drawings to indicate the heaters with your submittal.
74. Provide a copy of your State of Texas State Fire Marshal's Office license.
75. The title block shall contain the following;
 - i. Location of the installation.
 - j. Name and complete address of the business.
 - k. Name and complete address of the installing company.
 - l. Licensing information.
 - m. "Wet" signature of the RME.
 - n. Date.
 - o. Drawn by.
 - p. Authority Having Jurisdiction.
 - q. Scale.
76. An equipment legend shall be provided to include;
 - r. Symbol, sprinkler description, manufacturer, model number, and quantity for each device.
 - s. Pipe and fittings type.
 - t. Indicate which sprinkler heads are new, existing and relocated.
 - u. Indicate what piping is new and existing.
77. See NFPA 13, 2016 Edition for additional plan submittal requirements.
78. A full equipment listing.
79. Manufacturer documentation for all parts and materials used in the project.
80. Drawings shall be submitted for review and approval, PRIOR to installation.
81. Drawings shall be generated by the installing company specific to the installation. Drawings shall show plan view and other pertinent information.
82. The submittal package must include and identify all above requirements.
83. Installation of an automatic sprinkler system shall not be performed until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued for violation of Section 113.3 of the 2015 International Fire Code.

HIGH PILED STORAGE

84. For any building with a clear height in excess of 12 feet, the sprinkler system shall be designed to the maximum allowable storage height for Class IV commodities, or as determined by the commodities to be stored.

AUTOMATIC SPRINKLER SYSTEMS

85. A rack storage plan is required prior to fire sprinkler plan approval for any building in which high-piled storage will take place.

GENERAL SUBMITTAL REQUIREMENTS

86. Each submittal shall have a completed McKinney Fire Department Plan Review Permit Application.
87. Plans approved by the Fire Marshal's Office give authorization for installation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
88. All fire department inspection forms and permits shall be kept on the job site until final inspection.
89. All installations shall comply with the approved plans. Any deviation from the approved plans requires a re-submittal to the Fire Marshal's Office.

All automatic sprinkler system for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to the 2015 International Fire Code, as adopted and amended by City of McKinney.

This guide does not replace, nor supersede any codes and/or ordinances adopted by the City of McKinney, or determinations and positions of the Fire Chief or Fire Marshal.