



**FORT BEND COUNTY 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 Fort Bend County. This document shall assist in the preparation of 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. A permit shall be required for all modifications to an automatic sprinkler system with nine (9) or more heads reconfigured or added to the system. A full review of the entire system will be done to determine the impact on the entire protection system.
 - a. Example: Permit required for nine (9) or more sprinkler heads added or relocated; however a scope of work, signed by the company RME-G, must be submitted for all work not requiring a permit. Scope of work letter shall be on company letter head identifying the company name and SCR #. Scope of work letter shall be hand signed by an RME-G on register for the company. RME-G's printed name and license number shall be shown on the letter.
 - b. Example: Permit required for any pipe, valve or appurtenance changes.
 - c. Example: Like-for-like without a model number or version change and/or eight (8) or fewer heads added to a system do not require permits; however, a scope of work, signed by Company RME-G, must be submitted to the Fort Bend County FMO.
2. Unless specifically allowed by the 2012 International Fire Code or the 2012 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 2012 IBC to increase the building size, only an NFPA 13 sprinkler system shall be permitted.
3. Residential sprinkler systems installed in accordance with NFPA 13R, shall include sprinkler protection for patios, balconies and breezeways. Combustible attic construction shall have sprinkler protection for all R-1 & R-2 structures four (4) stories or more and all R-4 occupancies, regardless of building height.
4. An automatic sprinkler system shall be installed throughout new buildings, fire areas, and structures described in Sec. 903.2 of the International Fire Code (IFC). Buildings on the same lot shall adhere to the combined aggregate square footage. Separated fire areas, buildings and attached buildings must be separated by a UL listed four-hour fire rated wall, without openings, and must be supplied with separate utility connections to eliminate a requirement of automatic sprinkler system.
 - a. Exceptions: Automatic fire sprinklers are not required in the following open structures: Pavilions, open gazebos, detached canopies or open parking garages as defined by the Building Code. Except for parking garages, open structures shall have a minimum of seventy (70) percent clear opening on all sides. Parking garages shall be considered open structures when they meet the criteria for open parking garages as defined by the Building Code.
5. An automatic sprinkler system shall be installed in all new residential buildings classified by the International Building Code (IBC) as Group R-1, R-2 or R-4.
6. An automatic sprinkler system shall be installed throughout any Assembly building not accessible by an

- approved access roadway.
7. An automatic sprinkler system shall be installed throughout any existing non-residential building when any addition creates a space totaling seven thousand five hundred (7,500) square feet or more.
 8. An automatic sprinkler system shall be installed throughout any existing non-residential building when the combining of one (1) or more lease spaces results in a lease space totaling twelve thousand (12,000) square feet or more.
 9. An automatic sprinkler system shall be installed throughout all buildings containing a Group S-1 self-service storage facility. 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.
 10. When determining the requirement for sprinkler protection, the total occupant load will include outdoor seating or service areas that require re-entry into the structure in order to have unobstructed exit egress to a public way.
 11. Any new building exceeding 12,000 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.
 12. 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.
 13. Automatic sprinkler systems shall be designed with a minimum 10 PSI safety factor.
 14. 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 if wall-post sprinkler valves are installed.
 15. 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 activities.
 16. 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.
 17. 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 electronically supervised.
 18. 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.
 19. The Remote Fire Department Connection (FDC) shall be adjacent to or within 100 ft. of a fire hydrant. The minimum separation distance shall be 6 ft. from the face of the fire hydrant to the Remote FDC.
 20. A wall mount FDC must be located along the side of the building adjacent to the fire lane, unless otherwise approved by the Fire Marshal's Office.
 21. All FDC's 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.
 22. A wall mount FDC shall be placed within 100 ft. of a fire hydrant.
 23. Inspector test connections, drains, and ball-drips shall be piped directly to the exterior.
 24. 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.
 25. 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.
 26. Dry-system air compressors shall be hard wired.
 27. Pre-action system solenoids shall be wired for alarm activation upon AC current loss.

ALARMS FOR FIRE SPRINKLER

1. Approved audible devices shall be connected to every automatic sprinkler system. Such sprinkler water flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the

smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the building, in an approved location. When water flow supervision is provided, alarm devices shall be located within the interior of the building and for all provided spaces in order to provide an internal evacuation signal throughout the building. Group R-1, R-2 and condominiums shall be provided with an alarm signal device in each unit to provide an internal evacuation signal. Where a fire alarm system is installed, activation of the automatic sprinkler system shall activate the building fire alarm system.

STANDPIPE SYSTEMS

1. Standpipe systems shall be installed in accordance with this section and NFPA 14.
2. 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.
3. A fire pump shall be installed to provide for the necessary standpipe water supply, or as required by the Fire Code or Fire Marshal.
4. 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.
5. Hose valves shall have a 2 ½-inch outlet cap with a 2 ½-inch to 1½-inch reducer with cap and chain.
6. 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.

BACKFLOW PREVENTION DEVICES

1. All fire sprinkler systems are required to be provided with an approved method of backflow prevention.
2. The Fort Bend County Fire Marshal's Office 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 be located within the riser room. If the fire service lead-in is more than 100 ft. in total length, the assembly must me located in a below grade vault adjacent to the tap to the circulating main, preferable in an easement. Contact the MUD or Fort Bend County Engineering Department for requirements pertaining to backflow protection.
3. A reduced pressure zone (RPZ) backflow prevention device is required on antifreeze systems.
4. Assemblies shall be listed for fire protection use and installed in the correct orientation.
5. Assemblies must be capable of being electronically or mechanically monitored.
6. Assemblies must be provided with a *metered* bypass.
7. In accordance with NFPA 13 (Sec. 8.17.4.6), a method to perform a forward flow test at the system demand shall be provided downstream of the backflow prevention assembly.

EQUIPMENT IDENTIFICATION & ACCESS

1. All fire protection equipment shall be identified in an approved manor as outlined in Sec. 509 of the International Fire Code (IFC).

PERMIT SUBMITTAL REQUIREMENTS

1. Provide a written description of the work to be performed.
2. Faxed plans submittals will not be accepted.
3. Licensing information.
 - a. Provide a copy of your State of Texas State Fire Marshal's Office license
4. Plans shall be clear and legible and all sheets shall be in a common and appropriate scale.
5. An Original (Wet) RME signature and stamp, as required by TIC Chapter 6003, Sec. 34.717, is required on

- all plan drawings and calculations.
6. Provide full set of hydraulic calculations.
 - a. Description of the design area
 - b. Design density of each design area
 - c. Provide graphic representation of the water flow analysis
 - d. Provide the water supply test information
 7. Manufacturer documentation for all parts and materials used in the project.
 - a. Specific materials in the specification booklet are to be identified by an arrow or highlighter
 8. A minimum of two (2) 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. Scope of Work
 - b. Name and address of job site
 - c. Occupancy classification
 - d. Hydraulic calculations for each design area
 - e. Title Block
 - f. Equipment List
 - g. North arrow & scale
 - h. Site plan to include the all fire hydrants, fire lanes, fire department connections and the fire service lead-in
 - i. Floor plan
 - j. A complete full-height cross section of the building
 - k. Square footage & dimensions
 - l. Intended use of each room & location of doors
 - m. All pipe sizes & sprinkler locations
 - n. Sprinkler riser diagram
 - o. Inspectors test connection detail
 - p. Hanger details
 - q. Remote FDC details
 - r. Auxiliary drain details
 - s. Clearly indicate each remote area
 - t. Size and location of standpipe hose stations, if applicable
 9. The title block shall contain the following;
 - a. Location of the installation
 - b. Name and complete address of the business
 - c. Name and complete address of the installing company
 - d. Licensing information
 - e. "Wet" signature of RME
 - f. Date issued and any revisions
 - g. Drawn by
 - h. Authority Having Jurisdiction
 10. A legend shall be provided to include;
 - a. Total number and type of all heads shown on plans
 - b. Symbol, device description, manufacturer, model number, and quantity of each
 11. Drawings shall be generated by the installing company specific to the installation. Drawings shall show plan view and other pertinent information.
 12. Drawings shall be submitted for review and approval, PRIOR to installation.

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.

GENERAL SUBMITTAL REQUIREMENTS

1. Each submittal shall have a completed Fort Bend County Fire Marshal Plan Review Permit Application.
2. 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.
3. All fire department inspection forms and permits shall be kept on the job site until final inspection.
4. All installations shall comply with the approved plans. Any deviation from the approved plans requires a re-submittal to the Fire Marshal's Office.