



These guidelines are to be followed when an automatic fire sprinkler system within the City of Royse City is to be installed or modified. These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.

All Fire Sprinkler Systems shall conform to the 2018 International Fire Code, as adopted and amended by the City of Royse City, current edition of NFPA 13 and NFPA 14. These guidelines are not intended to replace, nor supersede any codes and/or ordinances adopted by the City of Royse City, or determinations and positions of the Royse City Fire Marshal's Office.

## Design

- ❖ 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 for Class IV commodities. **A minimum of 1" outlets shall be provided on all branch lines. A hexagonal bushing to accommodate sprinklers attached directly to branch lines is permitted**
- ❖ Double Check/Backflow Preventer is required and shall be installed inside the building. **A meter is not required**
- ❖ **A means shall be provided downstream of backflow prevention assembly for full-forward flow tests at system demand. (See Figures 1 and 2)**
- ❖ The system shall be designed with a 5 psi safety factor at 35 psi residual on City mains
- ❖ The water supply test used for design of the sprinkler systems shall be witnessed by the Royse City Fire Marshal's Office. The results of the flow test shall be within one year of the sprinkler plan submittal. The exact location of the static/residual hydrant and the flow hydrant shall be indicated on the design drawings. All fire protection plan submittals shall be accompanied by a water flow report
- ❖ All risers for building requiring multiple risers shall be centrally located
- ❖ 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. See RCFD Signage Requirements Packet
- ❖ Riser room shall be large enough to accommodate maintenance, provided with lighting hard-wired to the building electrical system, emergency lighting, and hardwired permanent heat

### Figures 1 and 2: Design Options to Accomplish the Forward Flow Test

Figure 1: Bypass the FDC Check Valve

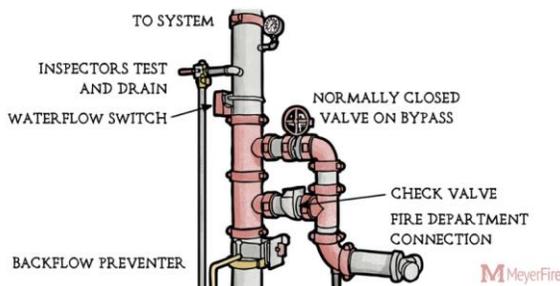
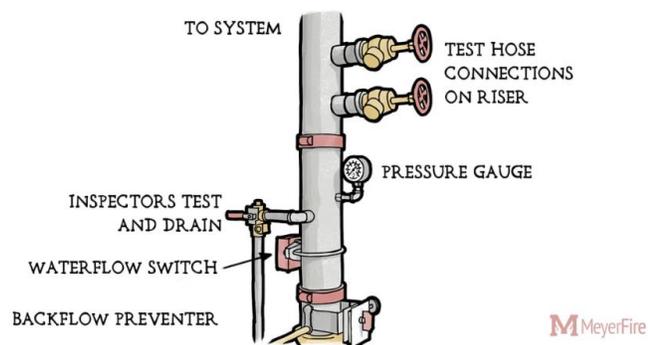


Figure 2: Provide Hose Connections for Testing





## NFPA 13R Systems

- ❖ Balconies, decks and open-ended corridors shall be protected in accordance with the 2018 International Fire Code
- ❖ Sprinkler protection is required in attic spaces of such buildings three or more stories in height, in accordance with NFPA 13 and or NFPA 13R requirements, and attached garages

## Installation

- ❖ Inspector test connections, drains, and ball-drips shall be piped directly to the exterior
- ❖ At least one inspection test valve shall be located at the remote system area
- ❖ Sprinkler and Standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe system except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering
- ❖ Dry-system air compressors shall be hard wired and shall have a listed air maintenance device connected to the compressor with a minimum 1/2" connection
- ❖ Pre-action system solenoids shall be wired for alarm activation upon current loss
- ❖ All systems with a chemical additive or antifreeze shall be provided with a reduced pressure principal backflow prevention assembly or a reduced pressure principal fire protection backflow prevention assembly. Where only added to a portion of a system, the device shall be permitted to be located so as to isolate only that portion of the system. (IPC 608.16.4.1)

## Standpipes

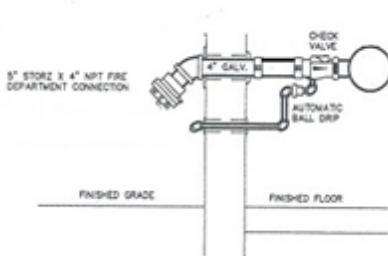
- ❖ In buildings exceeding 10,000 square feet in area per story, Class I automatic wet or manual wet standpipes shall be provided where any portion of the building's interior area is more than 30 feet of travel, vertically and/or horizontally, from the nearest point of fire department vehicle access
- Exceptions:**
- Automatic dry and semi-automatic dry standpipes are allowed as provided for in NFPA 14
  - R-2 occupancies of four stories or less in height having no interior corridors
- ❖ 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 psig and a maximum of 40 psig air pressure with a high/low alarm
  - ❖ When a roof-top hose connection is required, the hose connection shall be two-way
  - ❖ When standpipes are required, connections shall be placed at two hundred feet (200') intervals along major corridors thereafter
  - ❖ National Standard Thread (NST) shall be provided



## Wall mount and Remote Fire Department Connection

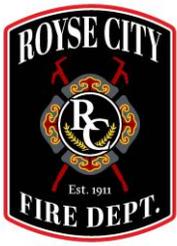
- ❖ FDC's for automatic sprinkler systems and/or standpipe systems for new buildings shall be equipped with a 5-inch "Storz" angled down with a "short bend" or 30° downturn with "Storz" cap. (See Figure 3)
- ❖ Check valves shall be accessible for 5-year inspection. If located underground, shall be installed within a meter can/valve box
- ❖ FDC shall be facing and visible from the fire lane
- ❖ FDC must be within 50-feet of a fire hydrant
- ❖ The FDC shall be clear and unobstructed with a minimum of a 5-foot clear all-weather path from fire lane access
- ❖ The FDC shall be installed 18-48 inches above grade
- ❖ Fire hose threads used shall be national standard hose thread
- ❖ The FDC shall discharge into the system on the discharge side of the pump if a pump is present.  
*See Underground Fire Lines guidelines for details on Remote Fire Department Connections (FDC)*

**Figure 3: Fire Department Connection Detail**



## Inspection Requirements

- ❖ **Do not stack the riser until the underground flushing has been completed.** Check Fire Sprinkler Underground permit for verification of completion
- ❖ Visual: All overhead piping and joints must be uncovered and exposed, with labeling of the pipe legible from the floor. All hangers will be visually inspected and must be uncovered and exposed to the floor
- ❖ Overhead Hydrostatic Test: Overhead piping will be visually inspected with all joints exposed and labeling of the pipe turned downward. The test will be at 200 psi for a minimum of two hours. No pressure drop or gain allowed
- ❖ A hydrostatic test is required for all new installations
- ❖ A hydrostatic test is required for all modifications/tenant finish-out with 20 or more sprinkler heads added and/or relocated
- ❖ 24-hour air test: The test will be conducted at 40 psi of air for 24-hours with less than 1.5-psi loss
- ❖ Trip Test: Operational test of the dry-pipe valve is performed and the quick opening device (500+ gallon systems) is tested, 750+ gallon systems must trip within 60 seconds
- ❖ Compressor Test: Dry system compressor fills the system within 30 minutes



## **FIRE SPRINKLER SYSTEM**

**Royse City Fire Department - Fire Marshal's Office**  
305 N Arch St. • Royse City, TX 75189 • Phone: 972.524.4819  
Website: <http://www.roysecity.com/departments/fire/>  
Email: [rcfd@roysecity.com](mailto:rcfd@roysecity.com)

- ❖ Riser Main Flush: Upon completion of the overhead hydrostatic test, the overhead piping will be drained and witnessed by the Fire Marshal's Office
- ❖ Riser Room: Verify riser room requirements, including floor drain for fire pumps, heat, light, markings, spare sprinkler head box and wrench, etc
- ❖ Standpipe and Fire Department Connection (FDC): Hydrostatic testing if not already done, the test will be at 200 psi for a minimum of two hours. No pressure drop or gain allowed. A flow test at hydraulically most remote standpipe through FDC to verify required pressure and flow
- ❖ Fire Pump: Hydrostatic testing (if not already done, the test will be at 200 psi for a minimum of two hours, no pressure drop or gain allowed), all piping flushed, pump room requirements verified, and operational test conducted by manufacturer witnessed by the fire department.
- ❖ Standpipe: Acceptance test in compliance with NFPA 14
- ❖ Fire Sprinkler Final: Final sign-off at completion of all inspections and the receipt of all State required paperwork. The inspection shall be conducted when all sheet rock and millwork is completed

**Plan submittal is only required for alterations/modifications involving 20 or more sprinkler heads, alterations/modifications to the system risers, and/or special applications (i.e. water curtains).**

**Minor fire sprinkler system modifications (such as adding fewer than 20 heads) do not require plan submittal. Work not requiring plans submittal: Contractors shall install a white service tag indicating location (i.e. Suite #) and scope of work.**

### **Submittal Requirements**

Prior to fire sprinkler system submittal, the underground fire line plans must have been submitted and approved. Underground plans must be included as a reference for hydraulic calculations

- ❖ **Each submittal shall be submitted to one of our approved 3rd Party Plan Review Firms (see Third Party Plan Review Guideline). And shall have a:**
  - City of Royse City Fire Permit Application. Registration of contractor with the city is required
  - If System is designed by a RME-G: A copy of State of Texas Fire Sprinklers General- RME license is required for the designing contractor
  - A copy of State of Texas Fire Sprinkler SCR license is required for the installing company.
  - All fire protection plan submittals shall be accompanied by a water flow report that was witnessed by the Royse City Fire Marshal's Office
- ❖ Plans shall be clear and legible and all sheets shall be in a common and appropriate scale (preferably computer generated). A stamped set of plans and one (1) set of specifications/cut sheets shall be submitted electronically. Plans shall contain sufficient detail to enable the plan reviewer to accomplish a complete review. **Plans that do not conform to the submittal requirements or are not clearly legible will be rejected and require a re-submittal**