ANNA FIRE MARSHAL'S OFFICE – PREVENTION DIVISION
FIRE SPRINKLER INSTALLATION

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This guide is intended as a resource and policy statement for all commercial buildings, structures, or facilities (new and existing) within the City of Anna. These guidelines shall be followed whenever an automatic fire sprinkler system is installed or modified. For the purposes of these instructions and any other guidelines or requirements of the Anna Fire Marshal's Office, fire sprinkler systems shall conform to the 2015 International Fire Code as adopted and amended by the City of Anna, the current edition of NFPA 13, and NFPA 14. These guidelines do not replace or supersede any codes and/or ordinances adopted by the City of Anna, nor do they supersede any determinations, interpretations, and positions of the Anna Fire Marshal's Office. Questions can be directed to the Anna Fire Marshal's Office (Fire Prevention Division) at (214) 831-5342 or by emailing firecad@annatexas.gov

Design

1) 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**.
2) Double Check/Backflow Preventers are required and shall be installed inside the building. **Water meters shall not be installed on any fire service line.**
3) A means shall be provided downstream of the backflow prevention assembly for full-forward flow tests at system demand
4) The system shall be designed with a 10-psi safety factor at 20-psi residual on City mains
5) The water supply test used for the design of the sprinkler system shall be witnessed by the Anna Fire Department. The results of the flow test shall be within one (1) 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 test report provided to the Anna Fire Marshal's Office.
6) All risers for buildings requiring multiple risers shall be centrally located
7) Sprinkler system risers providing protection for buildings with multiple tenant spaces must be located in a ground floor room directly accessible from the exterior. Fire riser and fire pump rooms shall be isolated within the building and used only for the purposes of fire suppression and/or fire alarm and control systems. Water heaters/boilers, mop sinks, roof access, electrical, and storage are examples of prohibited equipment within a riser room. Dimensional requirements for riser rooms are as follows: **Rooms serving a single riser must be 20 sq. ft. in size with a minimum 4' wide dimension; rooms serving multiple risers may require additional square footage as determined by the Fire Code Official.** All riser and pump rooms shall be directly accessible from the exterior of the structure and be provided with a secured exterior access door. Hardwired permanent heat shall be provided. The exterior access door shall be

equipped with signage in accordance with the written policy statements of the Fire Marshal's Office.

8) **Exterior vaults containing double-check valves for underground fire water lines (also called underground fire mains) are not permitted.** Double-check valves shall be installed in the riser room, the main sprinkler control valve room, or as directed by the Fire Marshal's Office.

NFPA 13R Systems

9) Balconies, decks, and open-ended corridors shall be protected in accordance with the 2015 international Fire Code
10) Sprinkler protection is required in attic spaces of such buildings two (2) or more stories in height in accordance with NFPA 13 and or NFPA 13R requirements, and for attached garages
11) Sprinkler risers shall be located on a heated wall inside the garage

Installation

12) All inspector's test connections, drains, and ball-drips shall drain directly to the exterior
13) At least one (1) inspection test valve shall be located at the remote system area
14) Sprinkler 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.
15) 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
16) Pre-action system solenoids shall be wired for alarm activation upon electrical current loss
17) All systems with a chemical additive or antifreeze shall be provided with a reduced pressure principle backflow prevention assembly or a reduced pressure principle 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)
18) Only dry-pipe, pre-action, or listed automatic fire sprinkler systems shall be allowed to protect attic spaces.

    Exception: Wet-pipe fire sprinkler systems shall be allowed to protect non-ventilated attic spaces where:

    A. The attic sprinklers are supplied by a separate floor control valve assembly to allow ease of draining the attic system without impairing sprinklers throughout the rest of the building, and,

    B. Adequate heat shall be provided for freeze protection as per the applicable referenced NFPA standard, and,

    C. The attic space is a part of the building's thermal or heat envelope such that insulation is provided at the roof deck rather than at the ceiling level.
19) Multi-story buildings shall be zoned by floor and have separate control valves installed that will allow each floor to be independently isolated (shut-off) without effecting the operation of the sprinkler system on other floors
20) Supervision and monitoring is required on all valves on connections to water supplies, sectional control and isolation valves, and other valves in supply pipes to sprinklers and other fixed water-based fire suppression systems. Graphic maps shall be posted in the fire sprinkler riser room depicting sprinkler zones. Proper tagging and/or signage per Anna Fire Department specifications shall identify all valves as to function and to identify their location.

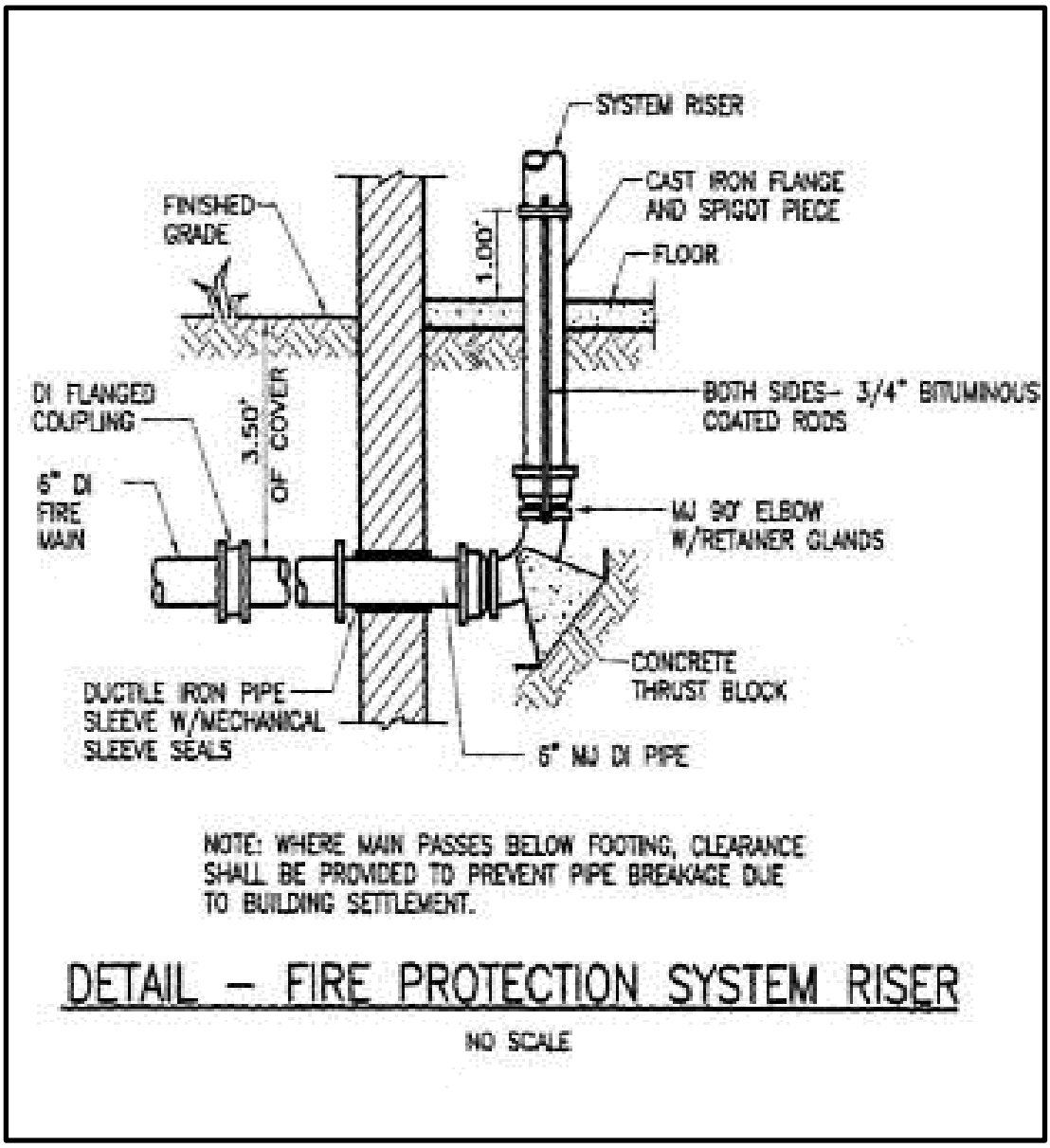
Standpipes

21) 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 200 feet of travel, vertically and/or horizontally, from the nearest point of fire department vehicle access.
Exceptions:
A. Automatic dry and semi-automatic dry standpipes are allowed as provided for in NFPA 14 or,
B. R-2 occupancies of four (4) stories or less in height having no interior corridors.
22) 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
23) When a roof-top hose connection is required, the hose connection shall be two-way
24) When standpipes are required, connections shall be placed at two hundred feet (200') intervals along major corridors thereafter
25) National Standard Thread (NST) shall be provided

Fire Department Connections (FDC)

26) All FDC connections shall be equipped with a locking Knox FDC Caps. KNOX products may be ordered online at www.knoxbox.com.
27) Check valves shall be accessible for 5-year inspection. If located underground, shall be installed within a meter can/valve box
28) FDC shall be facing and visible from the fire lane
29) FDC must be within 100-feet of a fire hydrant
30) The FDC shall be clear and unobstructed with a minimum of a 5-feet clear all-weather path from fire lane access
31) The FDC shall be installed 18-48 inches above grade
32) Fire hose threads used shall be National Standard Thread (NST)
33) The FDC shall discharge into the system on the discharge side of the pump if a pump is present
34) FDC's shall be five-inch (5") Storz connection with a 30-45 degree down angled elbow and locking "Knox" cap. Traditional 2-way Siamese connection with locking "Knox" caps may be used when approved by the Anna Fire Department
35) **Where the FDC is serving more than 500 GPM the building shall be provided with one five-inch (5") Storz connection AND one 2-way (2.5") Siamese connection**
36) Remote FDC's shall connect to the fire sprinkler riser inside the fire sprinkler riser room post all double-check valves or backflow preventers
37) FDC's shall be installed remotely and outside of a structure's collapse zone. The Fire Code Official may, were applicable, seek an equivalency to this requirement at his discretion.

***Figure 1*: Fire Riser and FDC Details (Remote and Wall-Mounted)**



GENERAL NOTES

1. Minimum pipe size leading to the FDC shall be determined by hydraulic calculations, but shall be a minimum of 4" for all systems. A 6" minimum pipe is required for all systems with a total demand exceeding 750 GPM.

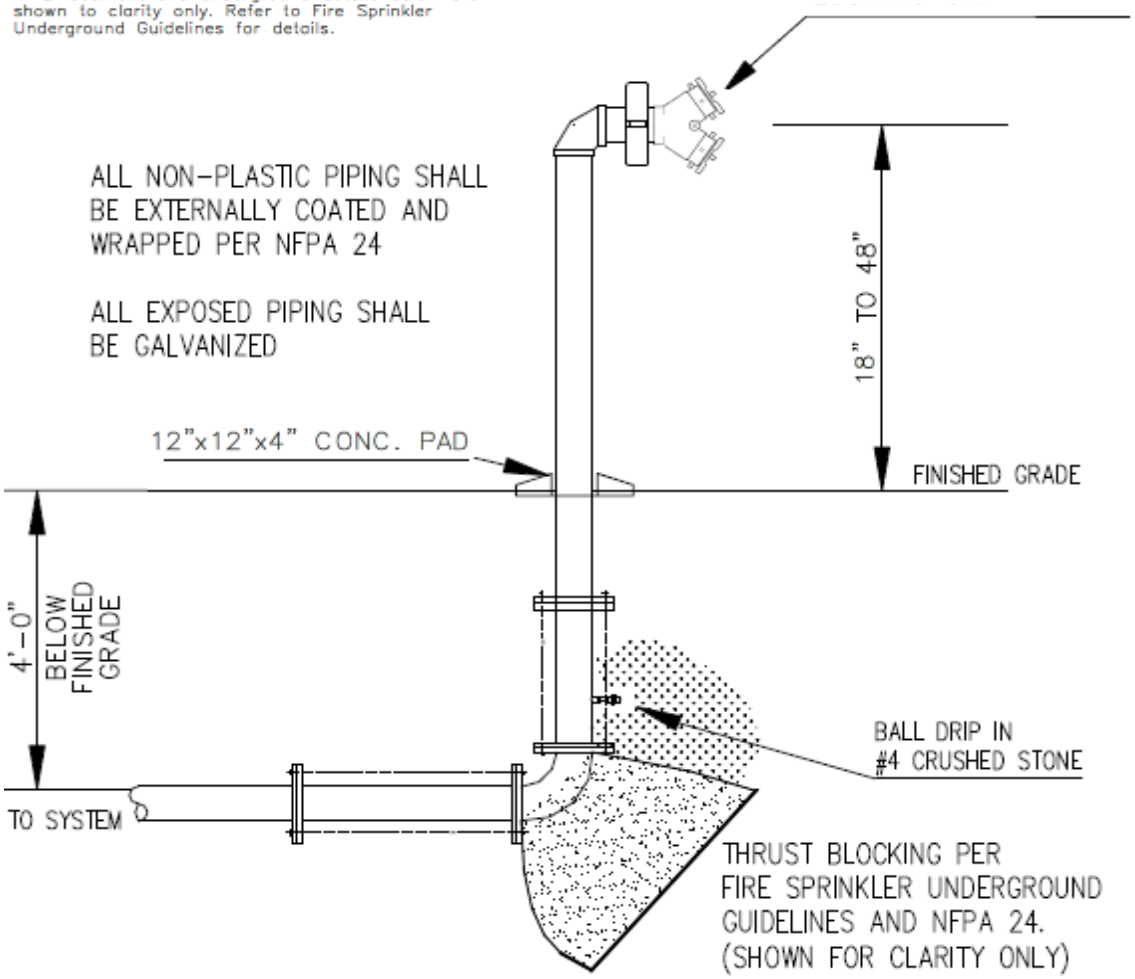
2. Knox locking caps are required on all connections.

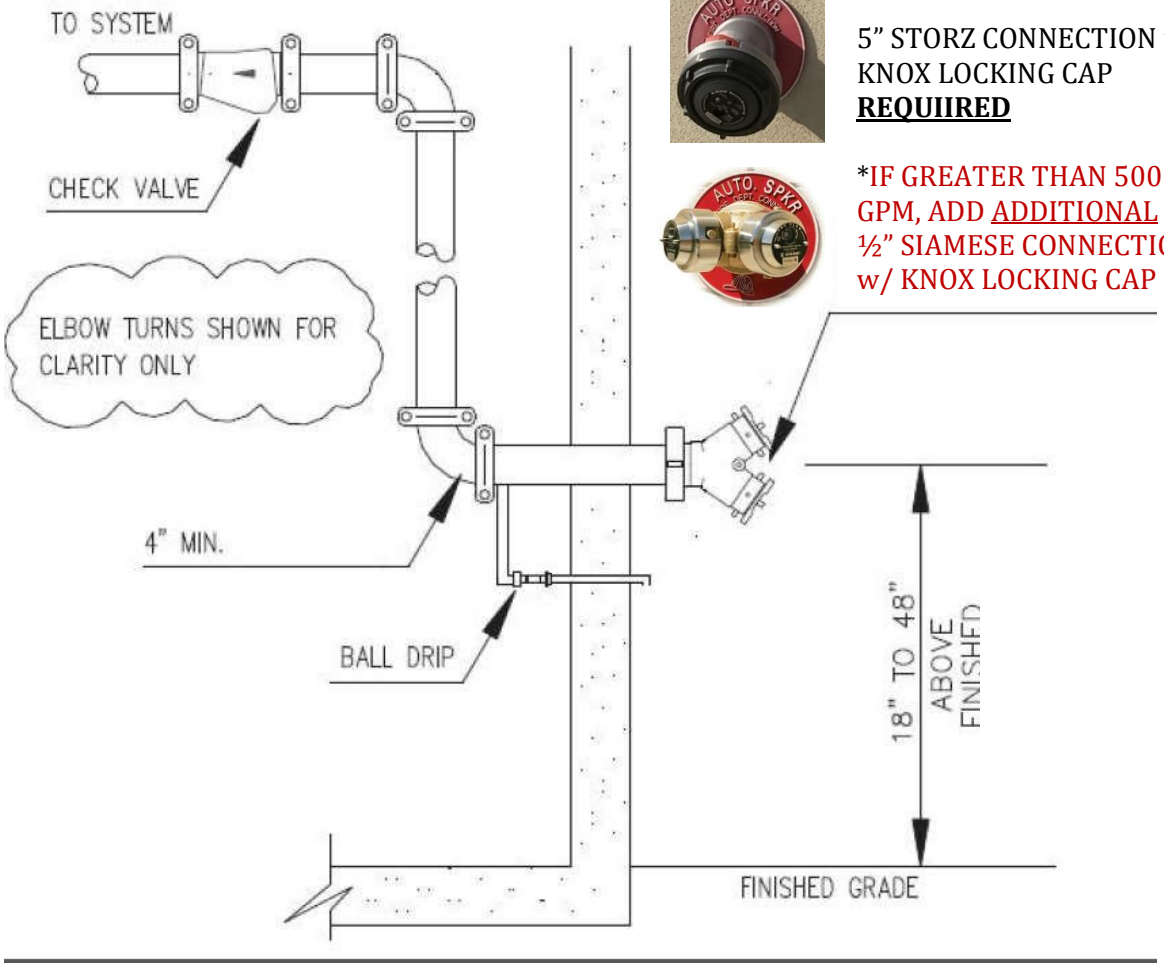
3. All exposed piping and fittings to be galvanized with the exception of the Siamese connection.

4. Embedment and underground details below are shown to clarity only. Refer to Fire Sprinkler Underground Guidelines for details.

5" STORZ CONNECTION w/ KNOX LOCKING CAP **REQUIRED**

*IF GREATER THAN 500 GPM, ADD ADDITIONAL 2 ½" SIAMESE CONNECTION w/ KNOX LOCKING CAP





5" STORZ CONNECTION w/ KNOX LOCKING CAP **REQUIIRED**

*IF GREATER THAN 500 GPM, ADD ADDITIONAL 2 ½" SIAMESE CONNECTION w/ KNOX LOCKING CAP

THE CITY OF Anna	EMBEDMENT	REV DATE: AUGUST 2020
	CLASS "B+" & CLASS "G"	STANDARD DRAWING NO. EMB-01

Inspection Requirements

38) **The sprinkler riser shall not be stacked until the underground fire main flush has been completed.** Check Fire Sprinkler Underground permit for verification of completion.
39) 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.
40) 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 (2) hours. No pressure reduction or gain is allowed.
41) A hydrostatic test is required for all new installations
42) A hydrostatic test is required for all modifications/tenant finish-out with ten (10) or more sprinkler heads added and/or relocated
43) 24-hour air test: The test will be conducted at 40 psi of air for 24-hours with less than 1.5-psi loss
44) 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
45) Compressor Test: Dry system compressor fills the system within 30 minutes
46) Riser Main Flush: Upon completion of the overhead hydrostatic test, the overhead piping will be drained and witnessed by the Fire Department
47) Riser Room: Verify riser room requirements, including floor drain for fire pumps, heat, emergency lighting, markings, spare sprinkler head box, and wrench, etc.
48) Standpipe and Fire Department Connection (FDC): Hydrostatic testing if not already done, the test will be at 200 psi for a minimum of two (2) hours. No pressure reduction or gain is allowed. A flow test at hydraulically most remote standpipe through FDC to verify required pressure and flow.
49) Fire Pump: Hydrostatic testing (if not already done, the test will be at 200 psi for a minimum of two (2) hours, no pressure reduction or gain is allowed.), all piping flushed, pump room requirements verified, and operational test conducted by manufacturer witnessed by the fire department.
50) Standpipe: Acceptance test in compliance with NFPA 14

General Requirements

51) Automatic Sprinklers shall not be installed in elevator machine rooms, elevator machine spaces, and elevator hoistways
52) An automatic sprinkler system shall be installed throughout all self-service storage facilities. A screen shall be installed at eighteen (18") inches below the level of the sprinkler heads to restrict storage above that level. This screen shall be a mesh of not less than one (1) inch not greater than six (6") inches in size. This screen and its supports shall be installed such that all elements are at least eighteen (18") inches below any sprinkler head
53) An automatic sprinkler system shall be installed throughout buildings with a floor level, other than penthouses in compliance with Section 1510 of the International Building Code, located 35 feet (10,668 mm) or more above the lowest level of Fire Department vehicle access
54) An automatic sprinkler system shall be installed throughout all buildings with a building area over 6,000 sq. ft. For the purpose of this provision, fire walls shall not define separate buildings. For this Section only, area measurement shall be based on outside dimensions of exterior walls, exclusive of vent shafts and courts, without deduction for corridors, stairways, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor

above. For upper-level attic type rooms areas where the ceiling height is less than five feet (5'0") shall not be considered. Unfinished space framed to permit future expansion of floor area shall be considered as part of the area. Joists designed to support floor loads shall be assumed to be for future area.

55) Water supply as required for such systems shall be provided in conformance with the supply requirements of the respective standards; however, every fire protection system shall be designed with a 10 psi safety factor

56) Hydraulic Design Information Sign (Hydraulic Data Nameplate). The installing contractor shall identify a hydraulically designed sprinkler system with a permanently marked (using etched or stamped lettering) weatherproof metal sign secured with corrosion-resistant wire, chain, or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, pre-action valve, or deluge valve supplying the corresponding hydraulically designed area. The sign shall include the following information:
    a) Location of the design area or areas
    b) Size (area) of or number of sprinklers in the design area
    c) Discharge densities over the design area or areas
    d) Required flow and residual pressure demand at the base of the riser or fire pump where applicable
    e) Occupancy classification or commodity classification and maximum permitted storage height and configuration
    f) Hose stream allowance included in addition to the sprinkler demand
    g) Name of the installing contractor

57) General Information Sign. The installing contractor shall provide a general information sign used to determine system design basis and information relevant to the inspection, testing, and maintenance requirements required by NFPA 25. Such general information shall be provided with a permanently marked (using etched or stamped lettering) weatherproof metal sign, secured with corrosion-resistant wire, chain, or other acceptable means. Such signs shall be placed at each system control riser, antifreeze loop, and auxiliary system control valve. The sign shall include the following information:
    a) Name and location of the facility protected
    b) Occupancy classification
    c) Commodity classification
    d) Presence of high-piled and/or rack storage
    e) Maximum height of storage planned
    f) Aisle width planned
    g) Encapsulation of pallet loads
    h) Presence of solid shelving
    i) Flow test data
    j) Presence of flammable/combustible liquids
    k) Presence of hazardous materials
    l) Presence of other special storage
    m) Location of venting valve
    n) Location of auxiliary drains and low point drains on dry pipe and pre-action systems
    o) Original results of main drain flow test
    p) Original results of dry pipe and double interlock pre-action valve test

q) Name of installing contractor or designer
r) Indication of presence and location of antifreeze or other auxiliary systems
s) Where injection systems are installed to treat MIC or corrosion: the type of chemical, concentration of the chemical, and where information can be found as to the proper disposal of the chemical

58) Combination hydraulic design information and general information signs are permitted. The sign shall include the following information:
a) Location of the design area or areas
b) Size (area) of or number of sprinklers in the design area
c) Discharge densities over the design area or areas
d) Required flow and residual pressure demand at the base of the riser
e) Occupancy classification or commodity classification and maximum permitted storage height and configuration
f) Hose stream allowance included in addition to the sprinkler demand
g) Name of the installing contractor

Fire Sprinkler System Modification Requirements

Plan submittal is only required for the following modifications:

- ☐ Addition or modification to initiation devices (such as water flow switches)
- ☐ Replacement or addition of major components such as risers, standpipes, or branch lines (*requires acceptance test*)

Minor fire sprinkler system modifications do not require plan submittal or fee payment, however, a scope of work letter shall be submitted. This includes alterations/modifications to the following: system risers or less than 10 sprinkler heads.

Work not requiring plans submittal: Contractors conducting general maintenance or similar services shall install a white service tag indicating the location (i.e. Suite #) and scope of work (i.e. "Added sprinkler head").

Submittal Requirements

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