

City of Plano



Fire - Rescue

Automatic Sprinkler Plan Submittal Guidelines

January 2015

Plan Submittal Guidelines are provided based on the 2012 International Fire Code, Policies, and Local Amendments. For additional information see our web site at www.planofire.org

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Automatic Fire Sprinkler System Plan Submittal Guidelines For Plano Fire Rescue

The Fire Department desires to assist its customers in the understanding of our submittal policy, procedure, and application process to achieve first-submittal approvals.

These guidelines:

- Are intended to assist in the preparation and submittal of Automatic Fire Sprinkler System plans for installation in the City of Plano.
- Contain pertinent information relating to the City of Plano adopted codes.
- Are not, however, to be interpreted as containing all data required for proper system design and/or approval.

The **Submitting Contractor** is responsible for complying with all locally adopted codes including the International Codes with local amendments.

These Guideline sections contain information related to:

- **General**
 - Fees (Automatic Sprinkler Systems only)
 - Policies
 - Codes, and Local Amendments (Automatic Sprinkler Sections Only)
- **Fire Sprinkler Systems Plan Review Application**
- **Requirements**
 - Automatic Sprinkler System Requirements
 - Minimum Sprinkler Drawing Requirements
 - Submittal Packet Requirements

General

Fire Sprinkler System Fees

The general contractor normally pays for initial permit fees.

- **Exception:** When the fire-sprinkler contractor is the only contractor working on the site, the following fee applies:

Fire Plan check Fee	
1-100,000 square feet	\$0.035 per square foot of building area. (min. \$60.00)
100,001-300,000 square feet	\$3,500 for the first 100,000 square feet, plus an additional \$0.017 for each additional square foot or fraction thereof.
300,001+ square feet	\$6,900 for the first 300,000 square feet, plus \$0.01 for each additional square foot or fraction thereof.
Fire Protection System work (When Fire Protection Contractor is only contractor on site.)	½ plan check fee (above) (min. \$100.00)
Re-stamp, Lost Plans or Addendum to Project	\$30.00 per hour
After Hours Inspections	\$75.00 per hour (min. \$150)
Same Day New Construction Inspection (See Policy)	\$75.00 per hour (min. \$150)
Expedited Plan Review (See Policy)	\$125

Polices

To provide a smooth and seamless process for building plan review and acceptance testing, all fire-protection plans must be **submitted prior to the general contractor receiving a framing inspection.**

The Fire Department's goal is to provide a *complete and accurate review in the shortest possible time.* We will strive to accommodate plan review requests within 10 working days for the first submittals, and 5 working days for interior finishes (less than 20 sprinklers), resubmittals, and undergrounds.

- Plans shall not be submitted until the contractor has a confirmed contract to install a system.
- Inspections above ceilings:
 - All inspections shall be completed before the ceiling is closed.
 - Hydrostatic test can be conducted as a partial inspection.
 - The Building Inspection Department will issue a release to close the ceiling when all above ceiling inspections are complete. The completion of a hydro or visual does not automatically give approval to cover the ceiling.
- High pile storage **under** 12,000 square feet:
 - Show commodity, storage height, etc. used to design the system.
 - Rack storage plan required prior to sprinkler plan approval.
- High pile storage **over** 12,000 square feet:
 - Show commodity, storage height, etc. used to design the system.
 - Rack storage plan required prior to sprinkler plan approval.
 - Smoke and heat vents shall be shown as an overlay to the sprinkler plans. This insures that sprinklers are not located in the vent cavity.

EXPEDITED PLAN REVIEW AND SAME DAY INSPECTION SERVICES

Scope of Program:

Effective the week of February 1, 2015, the City of Plano Fire Department will begin a same day plan review and inspection program for construction projects. The plan review and inspections will be completed and a fee assessed as the schedule allows. Same day requests will be processed on a first come first served basis until the schedule is full.

Days and Hours of Operation:

Same day plan review service

Available from 8:00 am until 11:00 am Monday thru Friday.

Same day inspection service

Will be scheduled from 1:30 pm to 5:00 pm with one hour meeting times.

Must be requested by 11:00 am by walk-in or by calling our inspection line at 972-941-7161.

Submittal Requirements:

The plans submittal requirements are the same as called out in our plan submittal guidebook and must include all information and scope for the entire permit as pulled through the Building Inspections Department. At a minimum the following information is needed:

- A completed Fire Department Submittal form.
- Three sets of rolled plans (24 – inch x 36 – inch) and one submittal/specification book.
- Fire alarm or sprinkler calculations as needed. Fire alarm plans must include battery calculations and voltage drop calculations for the effected circuit.

The plans will be processed in the order they are received on a first come – first served basis.

If, at any point in the review, the plan reviewer determines that the project requires information / approval from another department, the project will be kept for review within our typical plan review turn around times without assessing the same day review fee.

Types of Plans allowed for review:

- Underground fire sprinkler supply piping.
- Automatic fire sprinkler and fire alarm plans for remodel and interior finish permits for 50 sprinkler heads or 40 fire alarm devices maximum or 10,000 square feet maximum with no change in use.
- Fire sprinkler monitoring plans.
- Above ground fuel tanks 1,000 gallons or less
- Above ground propane tanks.

Types of Inspections allowed for Same Day Inspections:

- Fire Sprinkler Hydrostatic Test
- Fire Sprinkler Component Review
- Fire Sprinkler Visual Inspection
- Fire Sprinkler Insulation Inspection
- Fire Sprinkler Dry System Trip
- Fire Sprinkler Pre-action System Trip
- Fire Sprinkler FD Backflow Addition
- Fire Pump
- Underground Embedment
- Underground Flush
- Underground Hydrostatic Test
- Alternate Agent System
- Fixed Extinguishing System / Hood
- Knox Box Keys
- Fire Alarm Final, Fire Alarm Central Station Monitoring
- Fire Alarm Elevator Recall
- Underground Storage Tank Final, Pressure Test, Product Line Pressure, Strapping, Vapor Recovery Pressure, 2nd Line Pressure
- Flammable Liquid Tank
- High Piled Storage
- LPG Tank
- Materials Storage
- Smoke Control System / Stair Pressurization
- Gated Fire Lane Access
- In-home Day Care
- Fire Department Final Inspection

Fee's:

An expedited plan review fee of \$125 will be added to the construction permit for this requested service. This additional fee will be due regardless if submittals are approved or not approved.

A same day inspection fee of \$75 per hour (minimum \$150) will be added to the construction permit for this requested service. The additional fee will be due regardless if inspection is approved or disapproved.

Fire Protection Backflow Prevention

New Fire Sprinkler Systems:

All new fire sprinkler systems installed in the City of Plano will require backflow prevention.

Existing Building Sprinkler Systems:

Interior finish projects **exceeding 10,000 square feet or affecting 50 or more sprinkler heads** will require the existing building to be equipped with a new backflow preventer as approved by the Utility Operations Department.

A thorough hydraulic analysis, including plans, hydraulic analysis, revised hydraulic calculations, new fire flow data, and all necessary system modifications to accommodate the additional friction loss will need to be provided for existing systems being retrofit with a backflow preventer.

The existing system design will need to meet the safety factor that the system was built under as shown below. New areas of a building or changes to the existing design to a new hazard will need to meet the current sprinkler design requirements.

Existing System Safety Factor:

- Prior to the 1997 Uniform Fire Code (3-28-1998) systems will need a 10 % safety factor is required.
- Under the 1997 Uniform Fire Code (3-28-1998 to 9-10-2001) a 5 psi safety factor is required.
- Since the 2000 International Fire Code adoption (9-10-2001) a 10 psi safety factor is required.

All backflow assemblies shall be located inside of the building. Adequate room shall be accounted for and shown on the approved plans.

All backflow assemblies must be capable of being monitored electronically or locked in the full and open position.

Backflow assemblies must also be listed for use with fire protection systems.

All Fire Sprinkler Plan Submittals:

Must include a backflow prevention statement stating the make and model of the existing backflow preventer provided for the buildings fire sprinkler systems or shall state that an existing backflow preventer is not provided for the main building fire sprinkler systems.

For additional information, contact the City of Plano Utility Operations department at 972-769-4160.

Protection of Fire Sprinkler Piping From Inclement Weather

Purpose: This procedure defines the Plano Fire Department's role in the protection of fire sprinkler systems from freezing conditions.

Policy: The Plano Fire Department will follow and enforce the rules of the NFPA for the proper protection of sprinklered buildings. Protection from freezing conditions shall be the responsibility of the property owner.

Responsibility:

- The owner shall be responsible for maintaining adequate heat as required by the NFPA.
- The designer shall provide a note stating that adequate heat is being provided in all areas required by NFPA.
- The designer shall provide details of insulation being provided, chases, heat trace, or heat envelope design when pipe is located in an area that will not maintain 40 degrees F (exception: systems allowed to be in unheated areas such as dry systems or conditions shown below).

Guidelines: The Plano Fire Department under the direction of the NFPA will monitor the building for compliance per the NFPA code. Conditions requiring the use of this policy involve wet pipe sprinkler systems and are as follows:

- **Shell building-** buildings built without a tenant. The building does not have a permanent heat source. The heat source will be provided at tenant finish out. Until the first tenant is in place, the sprinkler system may be drained and placed out of service.
- **Tenant Finish-**when the first tenant is in place and prior to freezing conditions (temperatures below 40 degrees Fahrenheit), the tenant and all remaining spaces must be provided with heat. The heat shall be sufficient to maintain the fire sprinkler pipe above 40 degrees. Should the system freeze due to inadequate heat, the building will be closed until the sprinkler system is repaired and adequate heat is provided
- **Vacated existing buildings-** If an existing building is vacated and the heat is not maintained to the structure, all combustibles shall be removed and the sprinkler system drained prior to heat being removed or disconnected from the structure.

It is the owner's responsibility to maintain the fire sprinkler system as designed and installed. The fire department will inspect for proper installation of the sprinkler system. The presence or absence of heat is not part of the inspection required or conducted by the fire department. Proper installation of heat shall be the responsibility of the owner and the mechanical design team.

Policy for Water-flow Detectors and Control Valves

Plano Fire Department

As an alternate to Section 903.4 and Section 903.4.3 of the 2012 International Fire Code Amendments, systems installed in accordance with NFPA 13 R shall be allowed to provide water flow detectors and floor control valves as outlined below:

- 4 Story 13R Systems may include 2 floors with a maximum of 52,000 square feet per water flow detector and floor control valve. Monitoring panel must annunciate which floors are included in the zone or a placard must be placed on the monitoring panel stating which floors are included per zone.
- 2 & 3 Story 13R Systems may include 3 floors with a maximum of 52,000 square feet per water flow detector and floor control valve. Monitoring panel must annunciate which floors are included in the zone or a placard must be placed on the monitoring panel stating which floors are included per zone.

Note: Attic sprinkler systems must always have its own water flow detectors and control valves as required for the type of system installed.

Fire Department Knox FDC Caps Plano Fire Rescue

In accordance with the 2012 International Fire Code Section 912.3.1, locking fire department connection caps will be required on all new fire sprinkler and standpipe installations **Effective April 3, 2006**.

New Construction

All plans submitted on or after April 3, 2006 must have the Knox 2 ½” FDC plugs and Knox 5” storz cap as required for the design of the system.

You can order the FDC plugs and caps through the Knox-Box Company by going to <http://www.knoxbox.com/store/> or by calling 800-552-5669 or request a Knox Order form through the Plano Fire Marshal’s Office.

Existing Systems

Inspecting Contractors

The fire department connection shall be inspected in accordance with NFPA 25. If caps are missing from the system, all items listed in NFPA 25 shall be verified. New caps meeting the requirements of the 2012 International Fire Code shall be installed. The City of Plano Fire Department is using the Knox locking FDC cap system. The caps may be purchased from Knox using one of the above listed methods.

The installing contractor shall back flush the FDC and provide a maintenance report to the property owner for review by the fire inspector.

Fire Department Inspector

The fire department inspector shall fail the annual fire inspection/survey for the property until the maintenance report has been reviewed, indicating that the inspection violation has been corrected. Department desires to assist its customers in the understanding of our submittal policy, procedure, and application process to achieve first-submittal approvals.

Codes

Fire-Sprinkler Systems are to be installed in accordance with the 2012 International Codes and Local Amendments.

**SUMMARY OF
2012 INTERNATIONAL BUILDING CODE AMMENDMENTS
FOR FIRE PROTECTION SYSTEMS
(www.buildinginspections.org for full copy of amendments)**

Section 901.5 Installation acceptance testing; amended by the addition of the following:

Section 901.5 Installation acceptance testing. All required tests shall be conducted by and at the expense of the owner or his representative. The Fire Department shall not be held responsible for any damages incurred in such test. Where it is required that the Fire Department witness any such test, such test shall be scheduled with a minimum of 48 hour notice to the Fire Chief or his representative.

Section 901.7 Systems out of service; is amended to read as follows:

Section 901.7 Systems out of service. Where a required fire protection system is out of service or in the event of an excessive number of activations, the fire department and the code official shall be notified immediately and, where required by the code official, the building shall either be evacuated or standby personnel shall be provided for all occupants left unprotected by the shut down until the fire protection system has been returned to service.

Where utilized, standby personnel shall be provided with at least one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

Section 903 Automatic Sprinkler Systems

Section 903.1.1 Alternative protection; is amended to read as follows:

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

Section 903.2 Where required; is amended to read as follows:

Section 903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Automatic Sprinklers shall not be installed in elevator machine rooms, elevator

machines spaces, and elevator hoistways. Storage shall not be allowed within the elevator machine room.

Section 903.2 Where required; is amended by the deletion of the following:

Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code or not less than 2-hour horizontal assemblies constructed in accordance, with Section 711 of the International Building Code, or both.

Section 903.2.1.1, 903.2.1.3, 903.2.1.4, 903.2.3, 903.2.4 903.2.7, 903.2.9, and 903.2.9.1 are amended to read as follows:

Section 903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for Group A-1 Occupancies where one of the following conditions exists:

The fire area exceeds 6,000 square feet (557.4m²).

2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than the level of exit discharge.
4. The fire area contains a multi theater complex.

Section 903.2.1.3 Group A-3. An automatic sprinkler system shall be for Group A-3 Occupancies where one of the following conditions exists:

1. The fire area exceeds 6,000 square feet (557.4m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than the level of exit discharge.

Section 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for Group A-4 Occupancies where one of the following conditions exists:

1. The fire area exceeds 6,000 square feet (557.4m²).
2. The fire area has an occupant load of 300 or more
3. The fire area is located on a floor other than the level of exit discharge.

Section 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E Occupancies where one of the following conditions exists:

1. Throughout all Group E fire areas greater than 6,000 square feet (557.4m²) in area;
2. Throughout every portion of educational building below the level of exit discharge.

Exception: An automatic sprinkler system is not required in any fire area or area below the level of exit discharge where every classroom throughout the building has at least one exterior exit door at ground level.

Section 903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 Occupancy where one of the following conditions exists:

1. Where a Group F-1 fire area exceeds 6,000 square feet (557.4m²);
2. Where a Group F-1 fire area is located more than three stories above grade plane;
or
3. Where combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230m²).
4. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

Section 903.2.7 Group M. An automatic sprinkler system shall be provided throughout all buildings containing a Group M Occupancy where one of the following conditions exists:

1. Where a Group M fire area exceeds 6,000 square feet (557.4m²);
2. Where a Group M fire area is located more than three stories above grade plane;
or
3. Where the combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230m²).
4. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464m²)

Section 903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 Occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 6,000 square feet (557.4m²);
2. A Group S-1 fire area is located more than three stories above grade plane; or
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230m²).
4. A Group S-1 fire area used for the storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (464m²).
5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2500 square feet (232m²).

Section 903.2.9.1 Repair Garages. An automatic sprinkler system shall be provided throughout all buildings used as Repair Garages where one of the following conditions exists:

1. Buildings two or more stories in height, including basements, with a fire area containing a repair garage exceeding 6,000 square feet (557.4m²);
2. One-story buildings with a fire area containing a repair garage exceeding 6,000 square feet (557.4m²);
3. Buildings with a repair garage servicing vehicles parked in the basement.
4. A Group S-1 fire area used for the repair of commercial trucks or buses where the fire area exceeds 5,000 square feet (464m²).

Section 903.2.9 Group S-1; is amended by the addition of the following:

Section 903.2.9.3 Self-service storage facility. 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 nor 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.

Section 903.2.11.3 Buildings more than 35 feet in height; is amended to read as follows:

903.2.11.3 Buildings more than 35 feet in height. An automatic sprinkler system shall be installed throughout buildings with a floor level, other than penthouses in compliance with Section 1509 of the International Building Code, that are located 35 feet (10,668 mm) or more above the lowest level of fire department vehicle access.

Exception: Open parking structures in compliance with Section 406.5 of the International Building Code.

Section 903.2.11 Specific building areas and hazards; is amended by the addition of the following:

Section 903.2.11.7 High Piled Combustible Storage. For any building with a clear height exceeding 12 feet (4,572 mm), see Chapter 32 to determine if those provisions apply.

Section 903.2.11.8 Spray Booths and Rooms. New and existing spray booths and spraying rooms shall be protected by an approved automatic fire-extinguishing system.

Section 903.2.11.9 Buildings Over 6,000 sq. ft. An automatic sprinkler system shall be installed throughout all buildings over 6,000 sq. ft. and greater, and in all existing buildings that are enlarged to be 6,000 square feet or greater, and in buildings greater than 6,000 square feet which are enlarged. For the purpose of this provision, fire walls, fire barriers, or horizontal assemblies shall not define separate buildings.

Exceptions:

1. Open parking garages in compliance with Section 406.5 of the International Building Code.
2. When of non-combustible construction, the area of awning extension or free-standing canopies, both sides, and not used for display or storage shall not be considered for requiring sprinkler protection for areas greater than 6,000 square feet but less than otherwise required in this code.

Section 903.2.11.10 Expanded Tenant Spaces. Fire sprinklers shall be installed in all tenant spaces where the total fire area exceeds 6,000 square feet. For the purpose of fire sprinklers, fire walls, fire barriers, or horizontal assemblies shall not be used to separate single tenant fire areas.

Section 903.3.1.1.1 Exempt locations; is amended to read as follows:

Section 903.3.1.1.1 Exempt locations. When approved by the fire code official, automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Generator and transformer rooms, under the direct control of a public utility, separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
3. Fire service access elevator machine rooms and machinery spaces.
4. Machine rooms and machinery spaces associated with occupant evacuation elevators designed in accordance with Section 3008 of the International Building Code.

Section 903.3.1.2 NFPA 13 R Sprinkler system; add Section to read as follows:

Sec 903.3.1.2 NFPA 13 R Sprinkler systems. Where allowed in buildings of Group R, up to and including four stories in height, automatic sprinklers shall be installed throughout in accordance with NFPA 13R. Sprinkler systems installed in accordance with 13R shall include sprinkler protection in combustibles attics of buildings two (2) or more stories in height.

Section 903.3.1 Standards; is amended by the addition of the following:

Section 903.3.1.4 Installation. Automatic sprinkler and standpipe systems shall be installed with the following:

1. A single underground supply from a looped water main and point for the Fire Department Connection (FDC) shall be provided for all buildings.
2. Fire department connections serving more than 500 GPM shall be provided with one 5-inch Storz connection and one 2-1/2 inch connection.
3. All inspectors' test, ball-drips, and main-drains shall be piped directly to the outside of the building.
4. At least one inspection test valve shall be located at the remote system area.
5. Risers shall be equipped with a properly sized test header.
6. Fire pumps shall be equipped with a properly sized test header.

7. Underground piping shall have a 10-foot minimum separation from all other utilities and placed in a separate trench. Underground piping within 5 feet of the building may be combined with other utilities for entrance to the building.

8. Porches and balconies shall be sprinklered on all Group R-2 and R-3 occupancies.

9. A minimum of 4-feet of pipe between the check valve and inside wall of the Fire Department Connection.

Section 903.3.5 Water supplies; is amended to include a second paragraph to read as follows:

Section 903.3.5 Water supplies. 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.

Section 903.4 Sprinkler system monitoring and alarms; is amended to include a second paragraph after the exceptions to read as follows:

Section 903.4 Sprinkler system monitoring and alarms. 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 a minimum of 45 seconds and not more than 90 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

Section 903.4.2 Alarms; is amended to include second paragraph to read as follows:

Section 903.4.2 Alarms. The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75 candela strobe rating, installed as close as practicable to the fire department connection.

Section 903.4.3 Floor control valves; is amended to read as follows:

903.4.3 Floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor.

Section 905 Standpipe Systems

Section 905.2 Installation standards; is amended to read as follows:

Section 905.2 Installation standards. Standpipe system 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.

Section 905.3 Required Installations.

Section 905.3.2 Group A; is amended to read as follows:

Section 905.3.2 Group A; delete exceptions 1 and 2.

Section 905.3.4; delete the section.

Section 905.3; is amended to add section 905.3.9 as follows:

Section 905.3.9 Travel Distance. Class I standpipes shall also be required on all occupancies in which the distance from accessible points for Fire Department ingress to any point in the structure exceeds two hundred fifty feet (250') along the route that a fire hose is laid as measured from the fire lane.

Section 905.4, item 5; is amended to read as follows:

Section 905.4 Location of Class I standpipe hose connections.

5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a two-way hose connection located either on the roof or at the highest landing of stairways with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.

Section 905.4, is amended to by the addition of item 7 as follows:

Section 905.4 Location of Class I standpipe hose connections.

7. When required by this Chapter, standpipe connections shall be placed adjacent to all required exits to the structure and at two hundred feet (200') intervals along major corridors thereafter.

Section 905.5; delete the section.

Section 905.6; delete the section.

Section 905.9 Valve supervision; is amended to add a second paragraph after the exceptions to read as follows:

Section 905.9 Valve supervision. 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 a minimum of 45 seconds and not more than 90 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

SUMMARY OF
2012 INTERNATIONAL FIRE CODE AMMENDMENTS
FOR FIRE PROTECTION SYSTEMS
(see www.planofire.org for full copy of amendments)

Sec. 202. General Definitions

Sec. 202; the following are amended to read as follows:

ATRIUM. An opening connecting three or more stories, other than enclosed stairways, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with Section 505 of the International Building Code.

HIGH-RISE BUILDING. A building having floors used for human occupancy located more than 55 feet (16,764 mm) above the lowest level of fire department vehicle access.

REPAIR GARAGE. A building, structure, or portion thereof used for servicing or repairing motor vehicles. This occupancy shall also include garages involved in minor repair, modification, and servicing of motor vehicles for items such as lube changes, inspections, windshield repair or replacement, shocks, minor part replacement, and other such minor repairs.

STANDPIPES, TYPES OF. MANUAL DRY. A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a fire department pumper to be pumped into the system through the fire department connection in order to supply the system demand. The system must be supervised as specified in Section 905.2.

HIGH-PILED COMBUSTIBLE STORAGE.

Sec. 202; add a second paragraph to the definition of “High-Piled Combustible Storage” to read as follows:

Any building exceeding 6,000 sq. ft. that has a clear height 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 as for Class IV commodities, to the maximum pile height.

Sec. 202 is amended by the addition of the following:

SELF-SERVICE STORAGE FACILITY. Real property designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.

Section 903. Automatic Sprinkler Systems

Sec. 903.1.1 is amended to read as follows:

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

Sec. 903.2 is amended to read as follows:

Sec. 903.2. Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Automatic Sprinklers shall not be installed in elevator machine rooms, elevator machines spaces, and elevator hoistways. Storage shall not be allowed within the elevator machine room.

Sec. 903.2 is amended by the deletion of the following:

Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code or not less than 2-hour horizontal assemblies constructed in accordance, with Section 711 of the International Building Code, or both.

Sec. 903.2.1.1, 903.2.1.3, 903.2.1.4, 903.2.3, 903.2.4 903.2.7, 903.2.9, and 903.2.9.1 are amended to read as follows:

Sec. 903.2.1.1. Group A-1. An automatic sprinkler system shall be provided for Group A1 Occupancies where one of the following conditions exists:

1. The fire area exceeds 6,000 square feet (557.4m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than the level of exit discharge.
4. The fire area contains a multi theater complex.

Sec. 903.2.1.3. Group A-3. An automatic sprinkler system shall be for Group A-3 Occupancies where one of the following conditions exists:

1. The fire area exceeds 6,000 square feet (557.4m²).
2. The fire area has an occupant load of 300 or more.

3. The fire area is located on a floor other than the level of exit discharge.

Sec. 903.2.1.4. Group A-4. An automatic sprinkler system shall be provided for Group A4 Occupancies where one of the following conditions exists:

1. The fire area exceeds 6,000 square feet (557.4m²).
2. The fire area has an occupant load of 300 or more
3. The fire area is located on a floor other than the level of exit discharge.

Sec. 903.2.3. Group E. An automatic sprinkler system shall be provided for Group E Occupancies where one of the following conditions exists:

1. Throughout all Group E fire areas greater than 6,000 square feet (557.4m²) in area;
2. Throughout every portion of educational building below the level of exit discharge.

Exception: An automatic sprinkler system is not required in any fire area or area below the level of exit discharge where every classroom throughout the building has at least one exterior exit door at ground level.

Sec. 903.2.4. Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 Occupancy where one of the following conditions exists:

1. Where a Group F-1 fire area exceeds 6,000 square feet (557.4m²);
2. Where a Group F-1 fire area is located more than three stories above grade plane; or
3. Where combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230m²).
4. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

Sec. 903.2.7. Group M. An automatic sprinkler system shall be provided throughout all buildings containing a Group M Occupancy where one of the following conditions exists:

1. Where a Group M fire area exceeds 6,000 square feet (557.4m²);
2. Where a Group M fire area is located more than three stories above grade plane; or
3. Where the combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230m²).
4. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464m²)

Sec. 903.2.9. Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 Occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 6,000 square feet (557.4m²);
2. A Group S-1 fire area is located more than three stories above grade plane; or
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230m²).
4. A Group S-1 fire area used for the storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (464m²).
5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2500 square feet (232m²).

Sec. 903.2.9.1. Repair Garages. An automatic sprinkler system shall be provided throughout all buildings used as Repair Garages where one of the following conditions exists:

1. Buildings two or more stories in height, including basements, with a fire area containing a repair garage exceeding 6,000 square feet (557.4m²);
2. One-story buildings with a fire area containing a repair garage exceeding 6,000 square feet (557.4m²);
3. Buildings with a repair garage servicing vehicles parked in the basement.
4. A Group S-1 fire area used for the repair of commercial trucks or buses where the fire area exceeds 5,000 square feet (464m²).

Sec. 903.2.9 is amended by the addition of the following:

Sec. 903.2.9.3. Self-service storage facility. 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 nor 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.

Sec. 903.2.11.3 is amended to read as follows:

903.2.11.3. Buildings more than 35 feet in height. An automatic sprinkler system shall be installed throughout buildings with a floor level, other than penthouses in compliance with Section 1509 of the International Building Code, that are located 35 feet (10,668 mm) or more above the lowest level of fire department vehicle access.

Exception: Open parking structures in compliance with Section 406.5 of the International Building Code.

Sec. 903.2.11 is amended by the addition of the following:

Sec. 903.2.11.7. High Piled Combustible Storage. For any building with a clear height exceeding 12 feet (4,572 mm), see Chapter 32 to determine if those provisions apply.

Sec. 903.2.11.8. Spray Booths and Rooms. New and existing spray booths and spraying rooms shall be protected by an approved automatic fire-extinguishing system.

Sec. 903.2.11.9. Buildings Over 6,000 sq. ft. An automatic sprinkler system shall be installed throughout all buildings over 6,000 sq. ft. and greater, and in all existing buildings that are enlarged to be 6,000 square feet or greater, and in buildings greater than 6,000 square feet which are enlarged. For the purpose of this provision, fire walls, fire barriers, or horizontal assemblies shall not define separate buildings.

Exceptions:

1. Open parking garages in compliance with Section 406.5 of the International Building Code.
2. When of non-combustible construction, the area of awning extension or free-standing canopies, both sides, and not used for display or storage shall not be considered for requiring sprinkler protection for areas greater than 6,000 square feet but less than otherwise required in this code.

Sec. 903.2.11.10. Expanded Tenant Spaces. Fire sprinklers shall be installed in all tenant spaces where the total fire area exceeds 6,000 square feet. For the purpose of fire sprinklers, fire walls, fire barriers, or horizontal assemblies shall not be used to separate single tenant fire areas.

Sec. 903.3.1.1.1 is amended to read as follows:

Sec. 903.3.1.1.1. Exempt locations. When approved by the fire code official, automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.

2. Generator and transformer rooms, under the direct control of a public utility, separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire resistance rating of not less than 2 hours.

3. Fire service access elevator machine rooms and machinery spaces.

4. Machine rooms and machinery spaces associated with occupant evacuation elevators designed in accordance with Section 3008 of the International Building Code.

Sec. 903.3.1.2; add Section to read as follows:

Sec 903.3.1.2. NFPA 13 R Sprinkler Systems. Where allowed in buildings of Group R, up to and including four stories in height, automatic sprinklers shall be installed throughout in accordance with NFPA 13R. Sprinkler systems installed in accordance with 13R shall include sprinkler protection in combustible attics of buildings two (2) or more stories in height.

Sec. 903.3.1 is amended by the addition of the following:

Sec. 903.3.1.4. Installation. Automatic sprinkler and standpipe systems shall be installed with the following:

1. A single underground supply from a looped water main and point for the Fire Department Connection (FDC) shall be provided for all buildings.

2. Fire department connections serving more than 500 GPM shall be provided with one 5-inch Storz connection and one 2-1/2 inch connection.

3. All inspectors' test, ball-drips, and main-drains shall be piped directly to the outside of the building.

4. At least one inspection test valve shall be located at the remote system area.

5. Risers shall be equipped with a properly sized test header.

6. Fire pumps shall be equipped with a properly sized test header.

7. Underground piping shall have a 10-foot minimum separation from all other utilities and placed in a separate trench. Underground piping within 5 feet of the building may be combined with other utilities for entrance to the building.

8. Porches and balconies shall be sprinklered on all Group R-2 and R-3 occupancies.

9. A minimum of 4-feet of pipe between the check valve and inside wall of the Fire Department Connection.

Sec. 903.3.5 is amended to include a second paragraph to read as follows:

Sec. 903.3.5. Water supplies. 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.

Sec. 903.4 is amended to include a second paragraph after the exceptions to read as follows:

Sec. 903.4. Sprinkler system monitoring and alarms. 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 a minimum of 45 seconds and not more than 90 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

Sec. 903.4.2 is amended to include second paragraph to read as follows:

Sec. 903.4.2. Alarms. The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75 candela strobe rating, installed as close as practicable to the fire department connection.

Sec. 903.4.3 is amended to read as follows:

903.4.3. Floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor.

Section 905. Standpipe Systems

Sec. 905.2 is amended to read as follows:

Sec. 905.2 Installation standards. Standpipe system 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.

Sec. 905.3. Required Installations.

Sec. 905.3.2 is amended to read as follows:

Sec. 905.3.2. Group A; delete Exceptions 1 and 2.

1. Open-air-seating spaces without enclosed spaces.
2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.

Sec. 905.3.4; delete the Section.

Sec. 905.3.4. Stages. Stages greater than 1,000 square feet (93 m²) in area shall be equipped with a Class III wet stand-pipe system with 1 ½ -inch and 2 ½ -inch (38mm and 64mm) hose connections on each side of the stage.

Exception: where the building or area is equipped throughout with an automatic sprinkler system, a 1 ½ -inch (38mm) hose connection shall be installed in accordance with NFPA 13 or in accordance with NFPA 14 for Class II or III standpipes.

Sec 905.3 is amended to add Section 905.3.9 as follows:

Sec. 905.3.9. Travel Distance. Class I standpipes shall also be required on all occupancies in which the distance from accessible points for Fire Department ingress to any point in the structure exceeds two hundred fifty feet (250') along the route that a fire hose is laid as measured from the fire lane.

Sec. 905.4., item 5 is amended to read as follows:

Sec. 905.4. Location of Class I standpipe hose connections.

5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3percent slope), each standpipe shall be provided with a two-way hose connection located either on the roof or at the highest landing of stairways with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.

Sec. 905.4 is amended to by the addition of item 7 as follows:

Sec. 905.4. Location of Class I standpipe hose connections.

6. When required by this Chapter, standpipe connections shall be placed adjacent to all required exits to the structure and at two hundred feet (200') intervals along major corridors thereafter.

Sec. 905.5; delete the section.

Sec. 905.6; delete the section.

Sec. 905.9 is amended to add a second paragraph after the exceptions to read as follows:

Sec. 905.9. Valve Supervision. 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 a minimum of 45 seconds and not more than 90 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

Section 912.2. Fire Department Connections

Section 912.2.3. Hydrant distance. An approved fire hydrant shall be located within 100 feet of the fire department connection as the fire hose lays along an unobstructed path.

Section 913. Fire Pumps

Sec. 913.1 is amended to include the following:

Sec. 913.1. General. When located on the ground level, the fire pump room shall be provided with an exterior fire department access door that is not less than 3 ft. in width and 6 ft. in height, regardless of any interior doors that are provided. A key box shall be provided at this door, as required by Section 506.1.

Exception: When it is necessary to locate the fire pump room on other levels or not at an exterior wall, the corridor leading to the fire pump room access from the exterior of the building shall be provided with equivalent fire resistance as that required for the pump room, or as approved by the fire code official. Access keys shall be provided in the key box as required by Section 506.1.

Section 914. Fire Protection Based on Special Detailed Requirements of Use and Occupancy

Sec. 914.3.1.2 is amended to read as follows:

914.3.1.2. Water supply to required fire pumps. Section 913 Fire Pumps In buildings that are more than 420 feet (128m) in building height, required fire pumps shall be supplied by connections to no fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the slow and pressure required for the pumps to operate.

Exception: Two connections to the same main shall be permitted provided the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through no fewer than one of the connections.

Section 1103. Fire Safety Requirement for Existing Buildings

Section 1103.5 is amended to read as follows:

1103.5. Sprinkler Systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 1103.5.1 through 1103.5.4.

Sec. 1103.5 is amended by the addition of the following sections:

Sec. 1103.5.3. Spray booths and rooms. Existing spray booths and spray rooms shall be protected by an approved automatic fire-extinguishing system in accordance with Section 2404.

Sec. 1103.5.4. Existing R-1, 2, 3, and 4 Occupancies: In R-1, 2, 3, and 4 occupancies where a fire has occurred and displaces one or more occupants, the affected building shall be fire-sprinkled prior to re-occupancy of the unit/building.

Fire Sprinkler Systems Plan Review Submittal

This section facilitates application for plan review. Included are the most frequently found code problems or questions and the Fire Department's standard policies for plan review and system acceptance.

Plans shall be submitted only to the Fire Department. Submittals require the completion of the Fire Department's "Plan Review Submittal Form", Figure 1. Plans will not be received without a completed form, **no exceptions!** (NOTE: When using a courier or mail service, make sure the completed form is attached.)

The permit number must be included on the form. This allows the Fire Department to communicate with Building Inspection Department via computer and achieve a short turn-around time for your plans and inspection scheduling needs. This is a goal we all share.

A minimum of three drawings and one set of hydraulic calculations and hardware specification sheets shall be submitted for review. Plans shall be submitted as blue- or black-line drawings. Plans are to be submitted in their entirety, showing the complete scope of the permit. Complete plans must be submitted **rolled**. **When the scope of the permit does not require any modifications to the fire sprinkler system, an email or letter can be submitted stating that the contractor has reviewed the project and determined that modifications to the sprinkler system are not needed for the proposed scope of work. The letter will then be reviewed against the project scope and submittal requirements removed as determined.**

Projects are tracked by the general contractor's building permit number. This number is required on the drawings just above the title block.

Where the Sprinkler Contractor is the only contractor working on the site, a permit must be obtained from the Building Inspection Department. The permit issued will be for fire sprinkler installation only. A permit fee is required for all Sprinkler Contractors acting as the sole site contractor. The fee is payable to the Building Inspection Department where a permit number will be assigned. Figure 2 depicts the plan-submittal process.

A Fire Sprinkler Plan submittal checklist is provided as Figure 3.

- Faxed plans:
 - Shall not include a match line. All of the plan shall fit on a single page.
 - Plans shall be drawn and submitted to a minimum 1/8-inch scale.
 - Can receive Legal size paper (8 ½ x 14) at Fax: 972-941-7609

- Underground plans:
 - Provide scope of work statement.
 - Example: “Fire sprinkler underground to be designed and installed by XYZ Company from tap to 1 foot above slab” or “Fire sprinkler underground to be designed by XYZ Company and installed by ABC Company from tap to 1 foot above slab.
 - Shall contain a title block and appropriate signatures of the general RME (RME) and the underground fire main RME (RME – U) This may require two title blocks. One plan may contain two submitting companies.

FIRE DEPARTMENT PLAN REVIEW SUBMITTAL FORM

Permit Number _____

1st Submittal Date _____ Resubmittal Date _____

Project Name _____

Project Address _____

Place “X” by Plan Type

<input type="checkbox"/> Automatic Sprinklers (40+ heads)	<input type="checkbox"/> Central Station Monitoring
<input type="checkbox"/> Underground Only	
<input type="checkbox"/> Less than 20 Heads	<input type="checkbox"/> Liquid Storage Tanks
<input type="checkbox"/> 20-40 Heads	<input type="checkbox"/> Smoke Removal
<input type="checkbox"/> Fire Alarm System	<input type="checkbox"/> As-Built / Revisions
<input type="checkbox"/> Less than 10 initiating or 5 indicating devices	<input type="checkbox"/> Other _____

Submitting Contractor

Company Name _____

Contact _____ Phone Number _____

- **Three (3)** sets of plans and **one (1)** submittal/specification book and fire alarm or hydro calculations will be required.
- Contact person will be notified upon **completion** of plan review.
- **Maximum** size of blue prints “E”. **For underground sprinklers only: 24-inch X 36-inch.**
- Submit all blue lines rolled. All calculations/submittals must be flat.
- Fire alarm plans must include complete battery calculations and voltage drop calculations for the effected circuit.

FIRE DEPARTMENT RECORDS ONLY

A ___ R ___ Working Days ___ Reviewed By _____ Date _____

FIGURE 1: Fire Department Plan Review Submittal Form

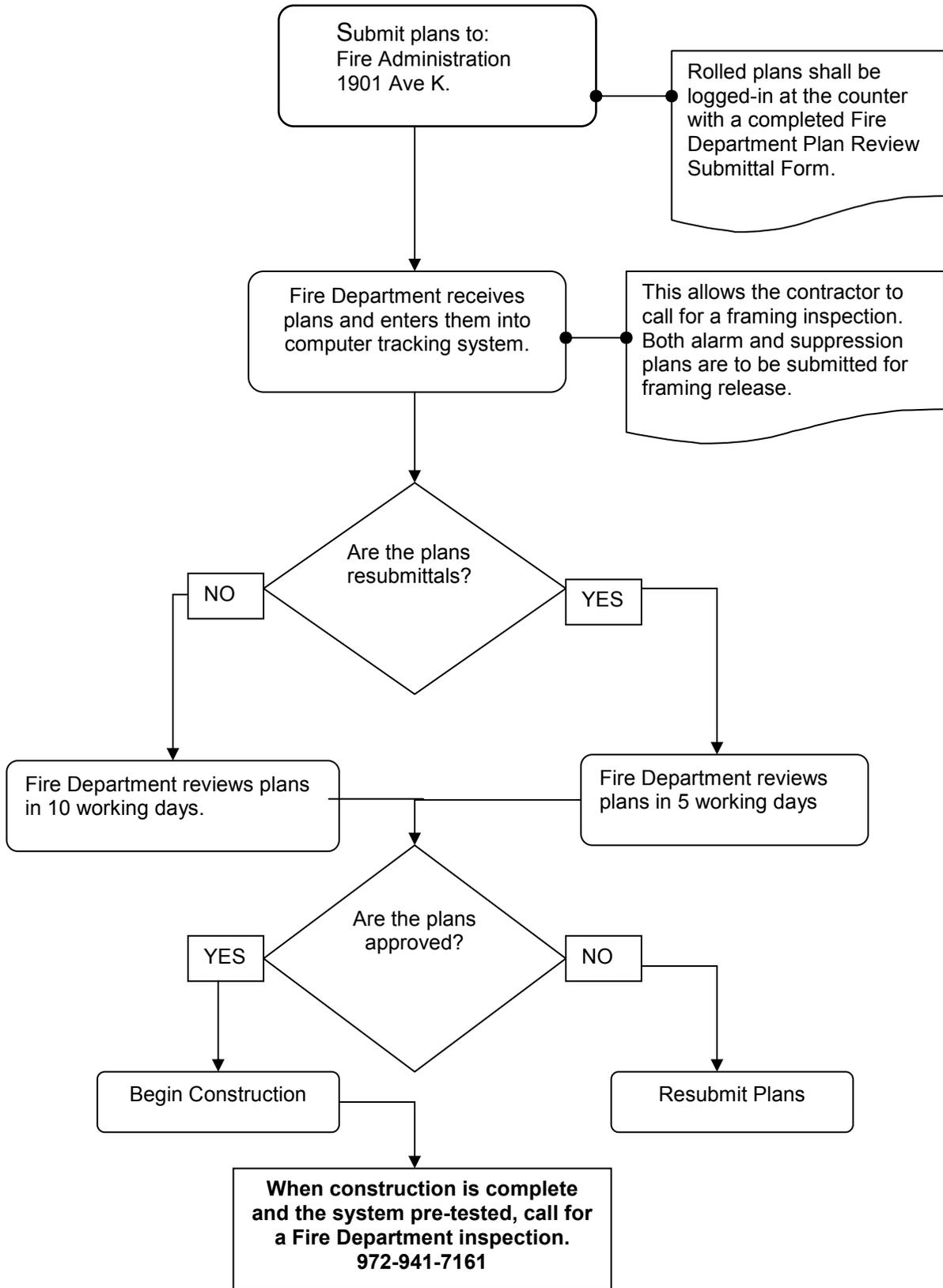


FIGURE 2: Plan Submittal Process

Minimum Sprinkler System Requirements:

- Title block including the following:
 - Permit Number
 - Project Name
 - Project Address
 - Contractor Name, Address and License Number
 - Drawn By
 - Scale
 - Date

- The following notes shall be included on all drawings:
 - Authority Having Jurisdiction
 - Designed in-accordance-with code and code date
 - All wet piping and heads shall be kept above 40 Degrees F
 - Note stating type of existing backflow preventer provided on the system or note stating that there is not a backflow preventer on the existing system.

- Plans drawn to an indicated scale
- RME or PE **WET** signature and stamp on each sheet
- Occupancy classification of each area or room
- Site plan showing water supply and applicable hydraulic references
- Sprinkler schedule with make, type, model, orifice size, and temperature rating
- Area of coverage provided by each head
- Total area protected by floor and system
- Capacity of dry pipe system or anti-freeze systems
- Pipe and fittings type and schedule
- Hanger schedule
- Location of alarm bells
- Size and location of hose valves
- Hydraulic data symbols and reference points
- Graphical representation of scale
- Design area information
- Relative elevations and junction points
- Underground spigot detail
- Embedment detail

Submittal Packet Requirements:

- Brief scope of work description
- Hydraulic calculations
- Hardware specifications and cut sheets
- Copy of RME license

Note: NFPA 13 **Chapter 23** details specific requirements for working plans. Provide all applicable details and/or notes.

Figure 3: Fire Sprinkler Plan submittal checklist

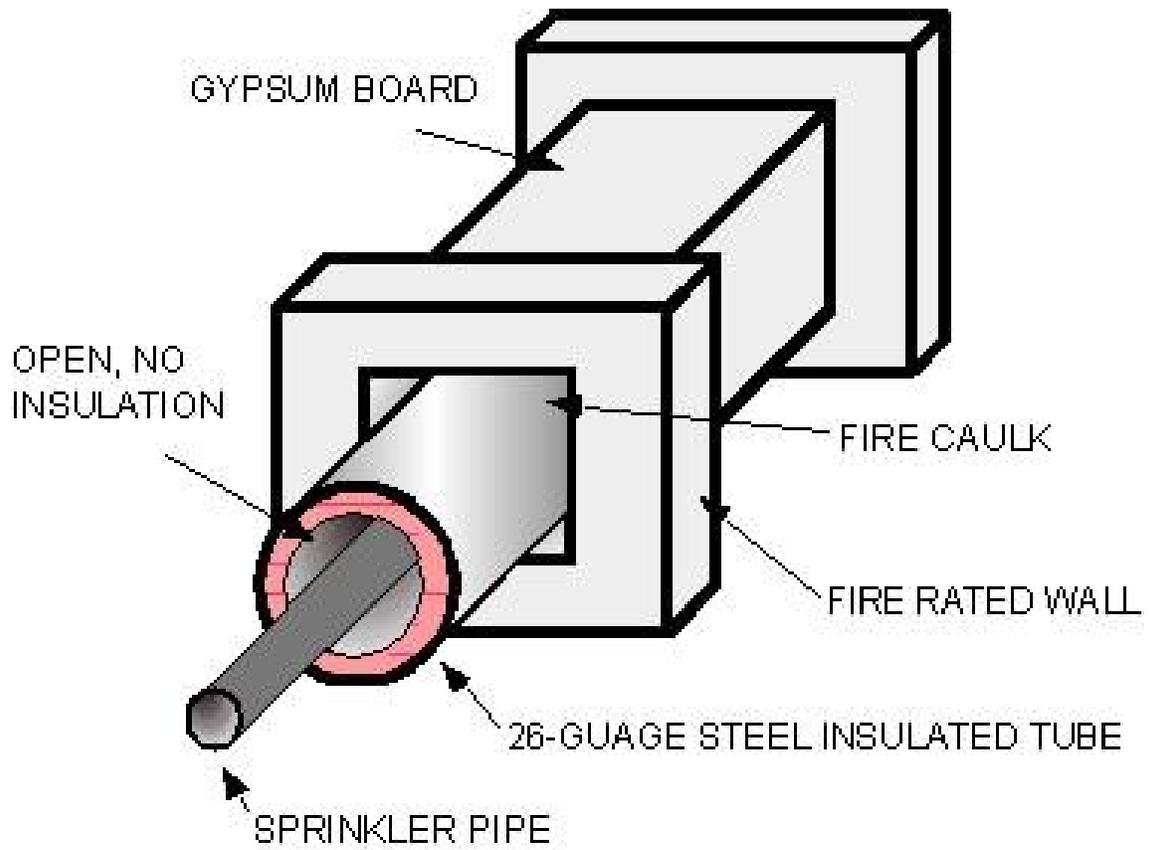
Automatic Sprinkler System Requirements:

- A minimum of 4-feet of pipe between the check valve and the inside wall of the Fire Department connection.
- The FDC shall be within 100 feet of a fire hydrant.
- The FDC shall be clear and unobstructed with a minimum 3-foot clearance.
- A single point for the Fire Department Connection (FDC) shall be provided for buildings with multiple risers.
- Fire department connections serving more than 500 GPM shall be provided with one 5-Inch Storz connection and one 2-1/2 inch connection.
- All inspectors' test, ball-drips, and main-drains shall be piped directly to the outside of the building.
- At least one inspection test valve shall be located at the remote system area.
- Reduced Pressure Zone valves shall be used on antifreeze systems.
- Risers shall be located in heated areas. Riser-room electrical heaters shall be hard wired.
- The riser-room shall be large enough to facilitate maintenance and testing of the sprinkler system.
- Elevator shaft tops **and machine rooms** shall **not** be sprinklered.
- Porches and balconies shall be sprinklered on all Group R-1 occupancies requiring sprinkler protection, however, the small exterior storage closets adjacent to porches and balconies in apartment buildings are not required to be sprinklered.
- Drip drums shall be in heated areas.
- Dry-system air compressors shall be hard wired.
- A high- and low-air-pressure alarm is required for all dry systems.
- **Pre-action systems shall be designed in accordance with NFPA requirements for battery backup. They are not required to be fail safe as in past Plano requirements.**
- Provide a 1-inch (minimum) water meter for single family residential (NFPA-13-D).
- Hose valves shall be 2 1/2-inch with cap and chain **and does not require a 1 1/2-inch reducer.**

- Atriums shall have water curtains.
- Pressure-reducing valves shall be used on systems exceeding 175 psi. These valves shall reduce static and residual pressure. (These are not to be “pressure-restricting valves”)
- Systems with pressure-reducing valves shall have a 3-inch pipe to drain directly to the outside.
- Fire pumps shall be equipped with a properly sized test header.
- Anti-frost and/or chemical additive systems shall meet the City of Plano Building Inspection requirements.
- Back-flow protection shall meet the City of Plano Utility Department requirements for back-flow information call 972-769-4160.
- Pump controllers shall be manual shutdown only (no timers).
- Underground embedment shall be No. 4 crushed stone (3/4” Nominal).
- Underground piping shall have a 10-foot minimum separation from all other utilities and placed in a separate trench. Underground piping within 5 feet of the building may be combined with other utilities for entrance to the building.

Standard details are provided for:

- Pipe Chase: Figure 4
- Embedment: Figure 5
- Attic Insulation: Figure 6
- Spigots: Figure 7
- Storz Detail: Figure 8



**TYPICAL PIPE CHASE
DETAIL**

Figure 4: Typical Pipe Chase Detail

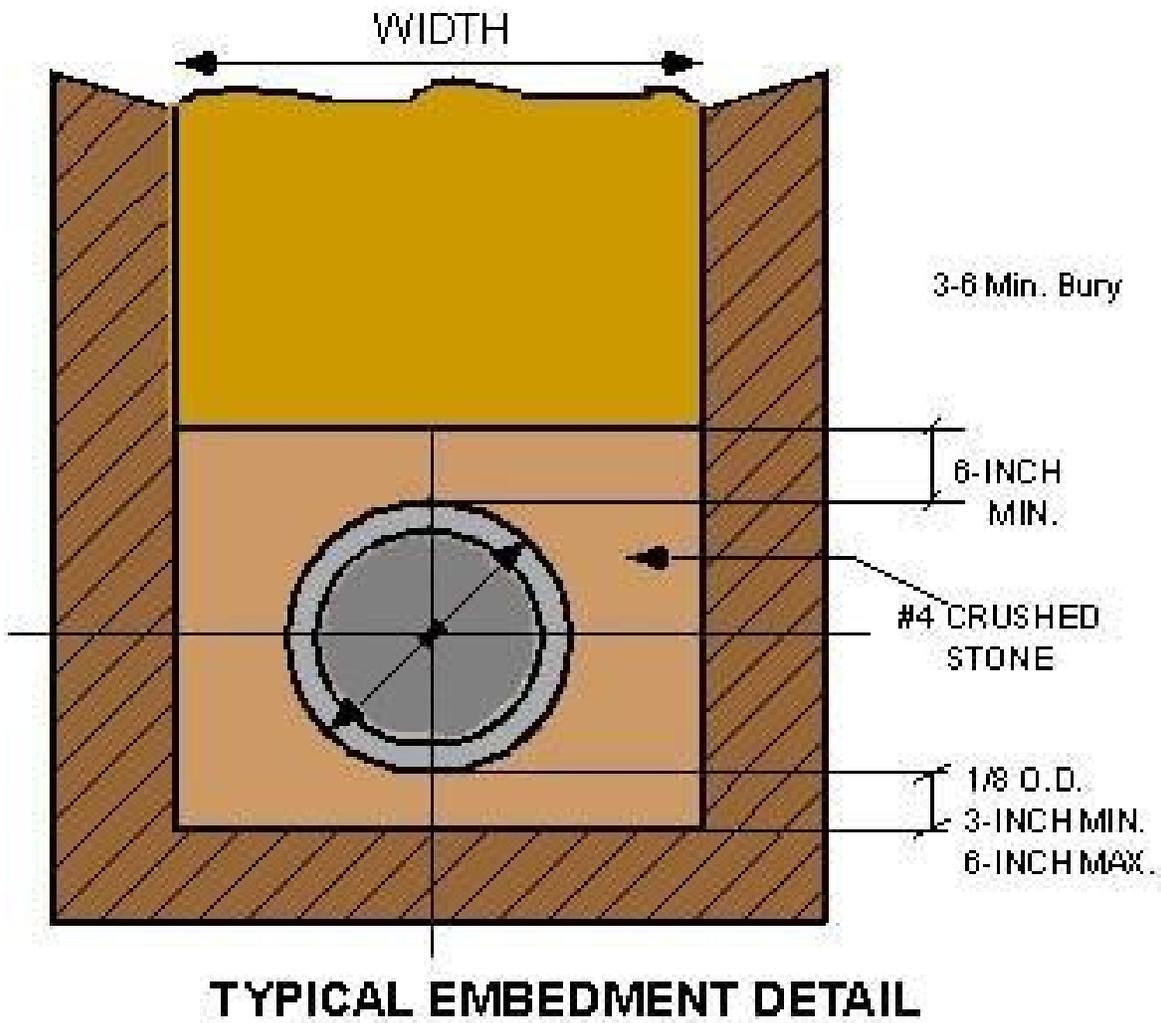
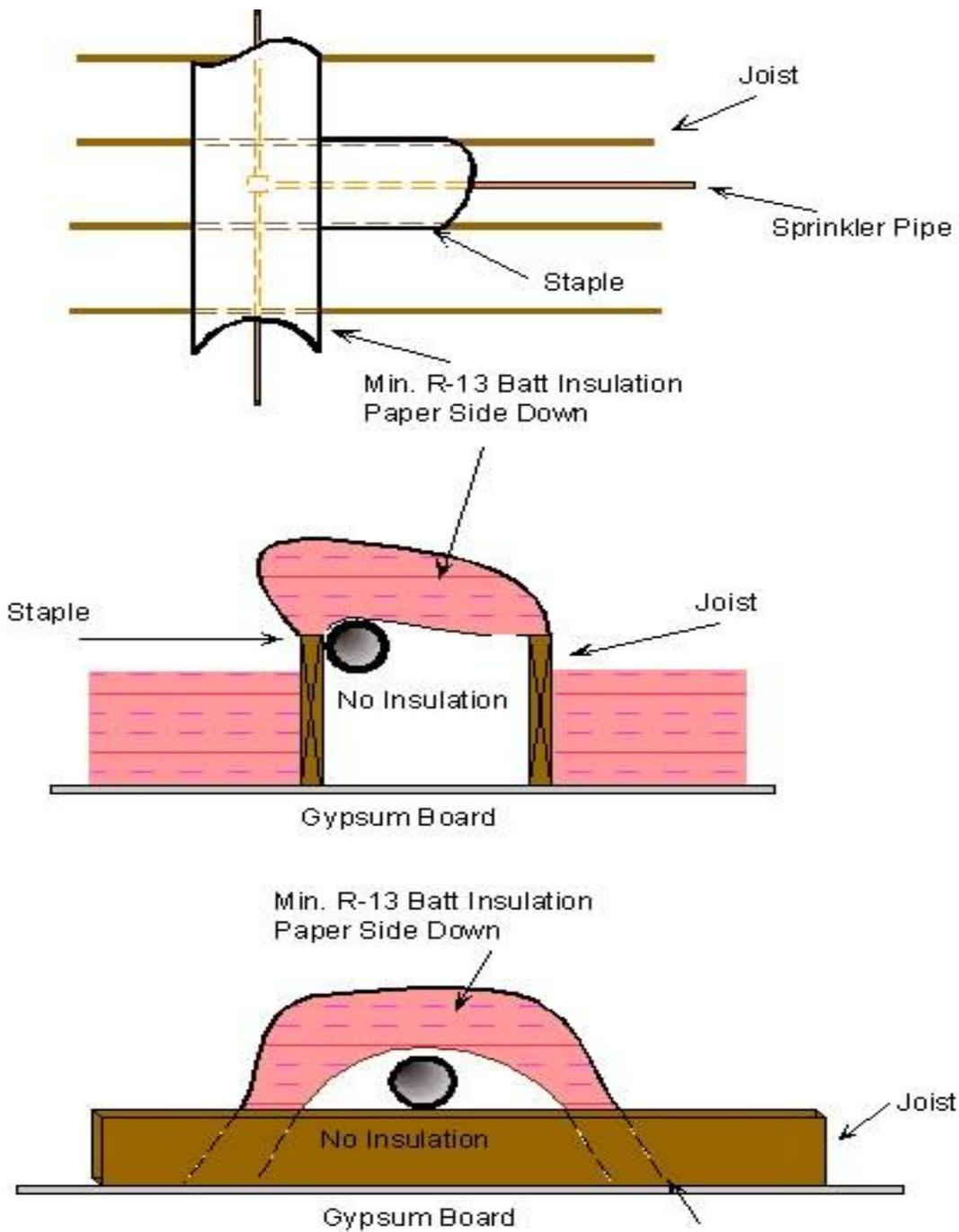
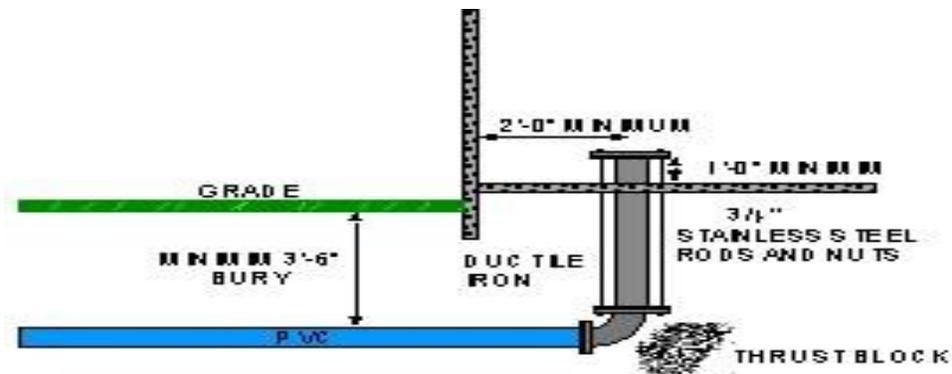


Figure 5: Embedment Detail

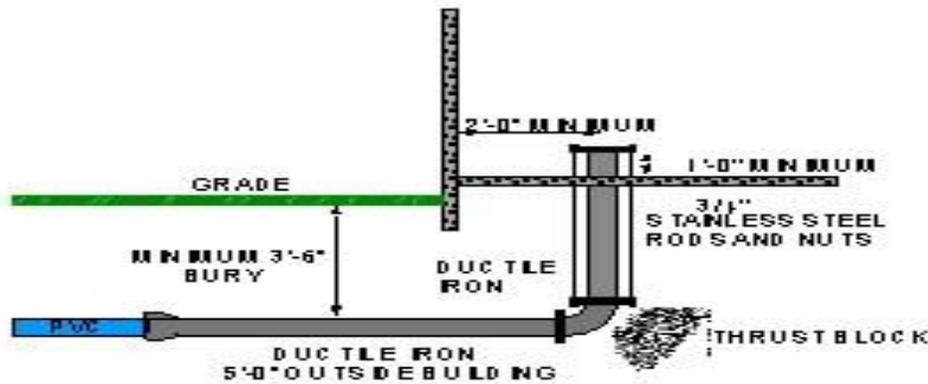


Attic Insulation Details

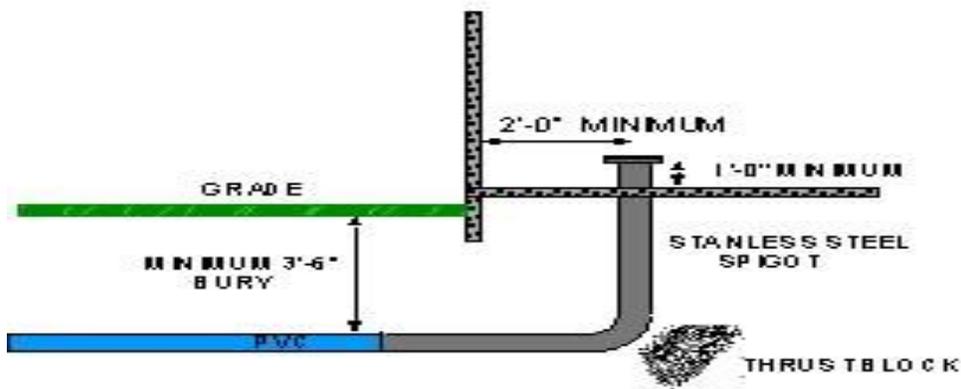
Figure 6: Attic Insulation Details



TYPICAL SPIGOT DETAIL



TYPICAL SPIGOT DETAIL
WHEN FIRE LINE STOPS
6'-0" OUTSIDE OF BUILDING



TYPICAL SPIGOT DETAIL
STAINLESS STEEL RISER

Figure 7: Spigot Details

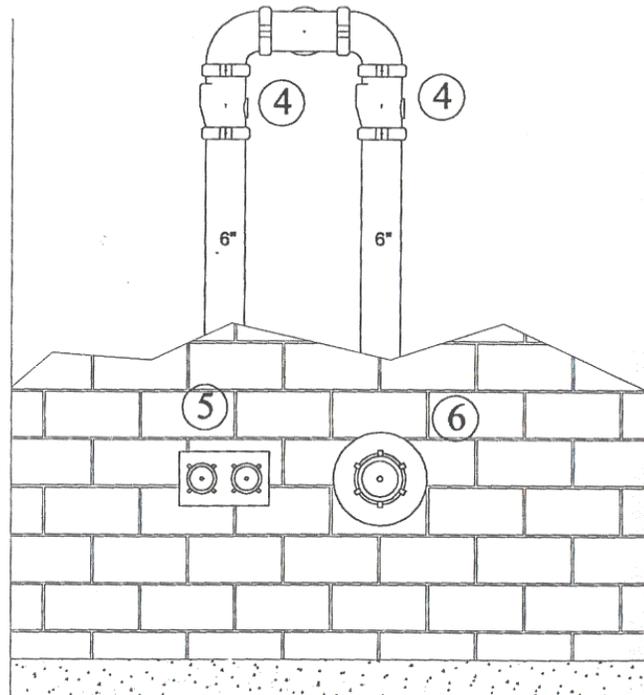
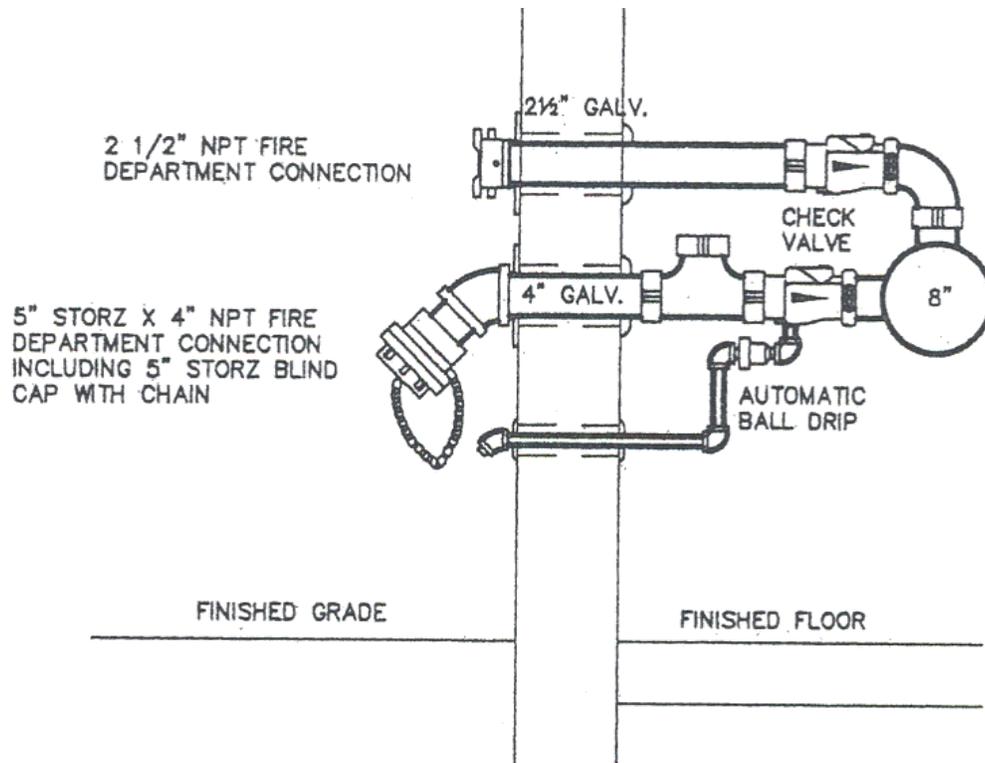


Figure 8: Storz Details