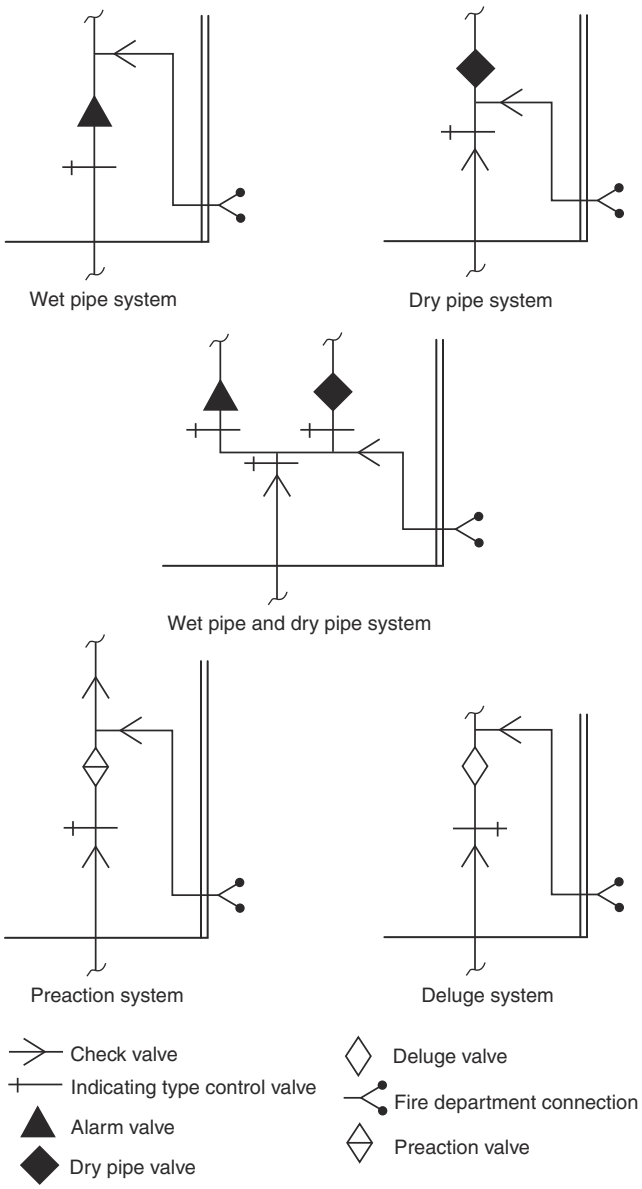


FIGURE A.16.9.3 Examples of Acceptable Valve Arrangements.

A.16.9.3.3 The management is responsible for the supervision of valves controlling water supply for fire protection and should exert every effort to see that the valves are maintained in the normally open position. This effort includes special precautions to ensure that protection is promptly restored by completely opening valves that are necessarily closed during repairs or alterations. The precautions apply equally to valves controlling sprinklers and other fixed water-based fire suppression systems, hydrants, tanks, standpipes, pumps, street connections, and sectional valves.

Either one or a combination of the methods of valve supervision described in the following list is considered essential to ensure that the valves controlling fire protection systems are in the normally open position. The methods described are intended as an aid to the person responsible for developing a systematic method of determining that the valves controlling sprinkler systems and other fire protection devices are open.

Continual vigilance is necessary if valves are to be kept in the open position. Responsible day and night employees should be familiar with the location of all valves and their proper use.

The authority having jurisdiction should be consulted as to the type of valve supervision required. Contracts for equipment should specify that all details are to be subject to the approval of the authority having jurisdiction.

(1) *Central Station Supervisory Service.* Central station supervisory service systems involve complete, constant, and automatic supervision of valves by electrically operated devices and circuits continually under test and operating through an approved outside central station, in compliance with *NFPA 72*. It is understood that only such portions of *NFPA 72* that relate to valve supervision should apply.

(2) *Proprietary Supervisory Service Systems.* Proprietary supervisory service systems include systems where the operation of a valve produces some form of signal and record at a common point by electrically operated devices and circuits continually under test and operating through a central supervising station at the property protected, all in compliance with the standards for the installation, maintenance, and use of local protective, auxiliary protective, remote station protective, and proprietary signaling systems. It is understood that only portions of the standards that relate to valve supervision should apply.

The standard method of locking, sealing, and tagging valves to prevent, so far as possible, their unnecessary closing, to obtain notification of such closing, and to aid in restoring the valve to normal condition is a satisfactory alternative to valve supervision. The authority having jurisdiction should be consulted regarding details for specific cases.

Where electrical supervision is not provided, locks or seals should be provided on all valves and should be of a type acceptable to the authority having jurisdiction.

Seals can be marked to indicate the organization under whose jurisdiction the sealing is conducted. All seals should be attached to the valve in such a manner that the valves cannot be operated without breaking the seals. Seals should be of a character to prevent injury in handling and to prevent reassembly when broken. When seals are used, valves should be inspected weekly. The authority having jurisdiction can require a valve tag to be used in conjunction with the sealing.

A padlock, with a chain where necessary, is especially desirable to prevent unauthorized closing of valves in areas where valves are subject to tampering. When such locks are employed, valves should be inspected monthly.

If valves are locked, any distribution of keys should be restricted to only those directly responsible for the fire protection system. Multiple valves should not be locked together; they should be individually locked.

The individual performing the inspections should determine that each valve is in the normal position, properly locked or sealed, and so note on an appropriate record form while still at the valve. The authority having jurisdiction should be consulted for assistance in preparing a suitable report form for this activity.

Identification signs should be provided at each valve to indicate its function and what it controls.

The position of the spindle of OS&Y valves or the target on the indicator valves cannot be accepted as conclusive proof that the valve is fully open. The opening of the valve should be followed by a test to determine that the operating parts have functioned properly.

The test consists of opening the main drain valve and permitting free flow of water until the gauge reading becomes stationary. If the pressure drop is excessive for the water supply involved, the cause should be determined immediately and the proper remedies taken. When sectional valves or other special conditions are encountered, other methods of testing should be used.

If it becomes necessary to break a seal for emergency reasons, the valve, following the emergency, should be opened by the person responsible for the fire protection of the plant, or his or her designated representative, and this person should apply a seal at the time of the valve opening. This seal should be maintained in place until such time as the authority having jurisdiction can replace it with one of its own.

Seals or locks should not be applied to valves reopened after closure until such time as the inspection procedure is carried out.

Where water is shut off to the sprinkler or other fixed water-based fire suppression systems, a guard or other qualified person should be placed on duty and required to continuously patrol the affected sections of the premises until such time as protection is restored.

During specific critical situations, a person should be stationed at the valve so that the valve can be reopened promptly if necessary. It is the intent of this section that the person remain within sight of the valve and have no other duties beyond this responsibility. This procedure is considered imperative when fire protection is shut off immediately following a fire.

An inspection of all other fire protection equipment should be made prior to shutting off water in order to make sure it is in operative condition.

In case of changes to fire protection equipment, all possible work should be done in advance of shutting off the water so that final connections can be made quickly and protection restored promptly. Many times it will be found that by careful planning open outlets can be plugged and protection restored on a portion of the equipment while the alterations are being made.

Where changes are being made in underground piping, all possible piping should be laid before shutting off the water for final connections. Where possible, temporary feed lines, such as temporary piping for reconnection of risers by hose lines, and so forth, should be used to afford maximum protection. The plant, public fire department, and other authorities having jurisdiction should be notified of all impairments to fire protection equipment.

A.16.9.3.4 It might be necessary to provide valves located in pits with an indicator post extending above grade or other means so that the valve can be operated without entering the pit.

A.16.9.5 Where check valves are buried, they should be made accessible for maintenance. This can be accomplished by a valve pit or any means that renders the valve accessible. See Figure A.16.9.6.

A.16.9.5.5 Where a system having only one dry pipe valve is supplied with city water and a fire department connection, it will be satisfactory to install the main check valve in the water supply connection immediately inside of the building. In instances where there is no outside control valve, the system indicating valve should be placed at the service flange, on the supply side of all fittings.

A.16.9.6 See Figure A.16.9.6. For additional information on controlling valves, see NFPA 22.

A.16.9.6.5 For additional information on controlling valves, see NFPA 22.

A.16.9.7 Check valves on tank or pump connections, when located underground, can be placed inside of buildings and at a safe distance from the tank riser or pump, except in cases where the building is entirely of one fire area, when it is ordinarily considered satisfactory to locate the check valve overhead in the lowest level.

A.16.9.8.3 Where the relief valve operation would result in water being discharged onto interior walking or working surfaces, consideration should be given to piping the discharge from the valve to a drain connection or other safe location.

A.16.9.9 Outside control valves are suggested in the following order of preference:

(1) Listed indicating valves at each connection into the building at least 40 ft (12 m) from buildings if space permits
(2) Control valves installed in a cutoff stair tower or valve room accessible from outside
(3) Valves located in risers with indicating posts arranged for outside operation
(4) Key-operated valves in each connection into the building

Post-indicator valves should be located not less than 40 ft (12 m) from buildings. When post-indicator valves cannot be placed at this distance, they are permitted to be located closer, or wall post-indicator valves can be used, provided they are set in locations by blank walls where the possibility of injury by falling walls is unlikely and from which people are not likely to be driven by smoke or heat. Usually, in crowded plant yards, they can be placed beside low buildings, near brick stair towers, or at angles formed by substantial brick walls that are not likely to fall.

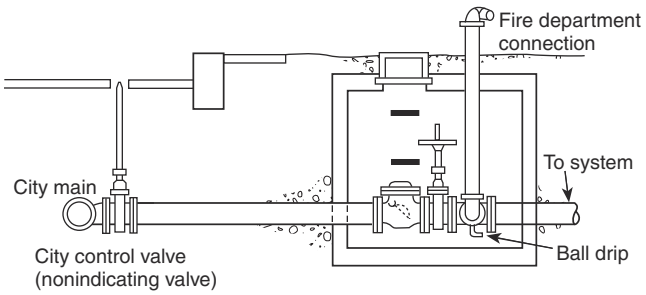


FIGURE A.16.9.6 Pit for Gate Valve, Check Valve, and Fire Department Connection.

A.16.9.10.2 A valve wrench with a long handle should be provided at a convenient location on the premises.

A.16.9.11.5 See Figure A.16.9.11.5.

A.16.9.12 The intent of 16.9.12 is to provide assistance in determining the area of a building served by a particular control valve.

A.16.9.12.3.1 Care should be taken to ensure that all water supplies are isolated before work begins. Work on systems by shutting one valve and not knowing about another valve could result in unexpected water discharge.

A.16.10.4.6 See Figure A.16.10.4.6(a) and Figure A.16.10.4.6(b).

A.16.10.5.2.1 An example of an accessible location would be a valve located approximately 7 ft (2.1 m) above the floor level to which a hose could be connected to discharge the water in an acceptable manner.

A.16.11.1.1 Audible alarms are normally located on the outside of the building. Listed electric gongs, bells, horns, or sirens inside the building, or a combination of such used inside and outside, are sometimes advisable.

Outside alarms might not be necessary where the sprinkler system is used as part of a central station, auxiliary, remote station, or proprietary signaling fire alarm system, utilizing listed audible inside alarm devices.

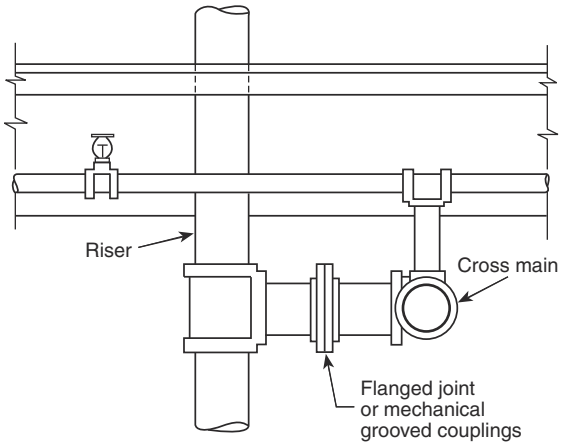


FIGURE A.16.9.11.5 One Arrangement of Flanged Joint at Sprinkler Riser.

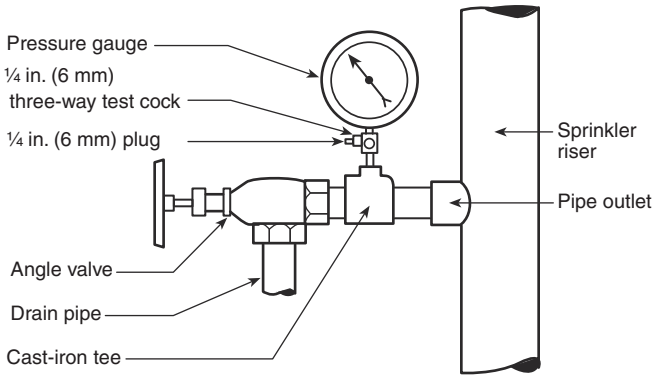


FIGURE A.16.10.4.6(a) Unacceptable Pressure Gauge Location.

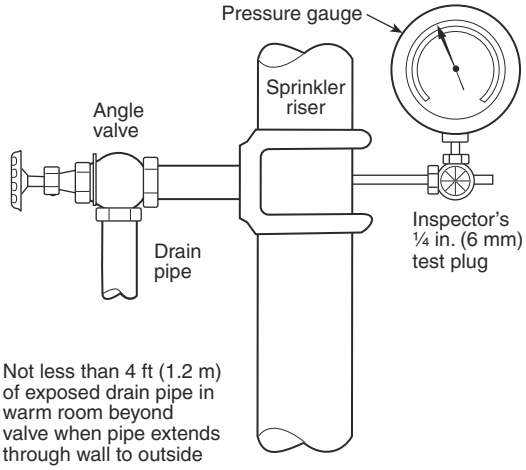


FIGURE A.16.10.4.6(b) Drain Connection for System Riser.

A.16.11.1.2 All alarm apparatus should be so located and installed that all parts are accessible for inspection, removal, and repair, and such apparatus should be substantially supported.

The water motor gong bell mechanism should be protected from weather-related elements such as rain, snow, or ice. To the extent practicable, it should also be protected from other influencing factors such as birds or other small animals that might attempt to nest in such a device.

A.16.11.2 Central station, auxiliary, remote station, or proprietary protective signaling systems are a highly desirable supplement to local alarms, especially from a safety to life standpoint. *(See 16.11.10.)*

Approved identification signs, as shown in Figure A.16.11.2, should be provided for outside alarm devices. The sign should be located near the device in a conspicuous position and should be worded as follows:

SPRINKLER FIRE ALARM — WHEN BELL RINGS

CALL FIRE DEPARTMENT OR POLICE.

A.16.11.3.4 The surge of water that occurs when the valve trips can seriously damage the device. Paddle-type waterflow devices are also permitted to be installed on wet systems that supply auxiliary dry pipe and/or preaction systems.

A.16.11.7 Switches that will silence electric alarm-sounding devices by interruption of electric current are not desirable; however, if such means are provided, then the electric alarm-sounding device circuit should be arranged so that, when the sounding device is electrically silenced, that fact should be indicated by means of a conspicuous light located in the vicinity of the riser or alarm control panel. This light should remain in operation during the entire period of the electric circuit interruption.

A.16.11.8 Water motor-operated devices should be located as near as practicable to the alarm valve, dry pipe valve, or other waterflow detection device. The total length of the pipe to these devices should not exceed 75 ft (23 m), nor should the

FIGURE A.16.11.2 Identification Sign.

water motor-operated device be located over 20 ft (6.1 m) above the alarm device or dry pipe valve.

A.16.11.10 Monitoring should include but not be limited to control valves, building temperatures, fire pump power supplies and running conditions, and water tank levels and temperatures. Pressure supervision should also be provided on pressure tanks.

Check valves can be required to prevent false waterflow signals on floors where sprinklers have not activated — for example, floor systems interconnected to two supply risers.

A.16.12 The fire department connection should be located not less than 18 in. (500 mm) and not more than 4 ft (1.2 m) above the level of the adjacent grade or access level. Typical fire department connections are shown in Figure A.16.12. See NFPA 13E.

A.16.12.1 Fire department connections should be located and arranged so that hose lines can be readily and conveniently attached without interference from nearby objects, including buildings, fences, posts, or other fire department connections. Where a hydrant is not available, other water supply sources such as a natural body of water, a tank, or a reservoir should be utilized. The water authority should be consulted when a nonpotable water supply is proposed as a suction source for the fire department.

A.16.12.3.1 The purpose of the fire department connection is to supplement the water supply but not necessarily provide the entire sprinkler system demand. Fire department connections are not intended to deliver a specific volume of water.

A.16.12.4 The purpose of a fire department connection is to supplement the pressure to an automatic fire sprinkler system. It is not the intent to size the fire department connection piping based on system demand. For multiple system risers supplied by a manifold, the fire department connection need not be larger than that for an individual system.

A.16.12.5 The check valve should be located to maximize accessibility and minimize freezing potential. It is recommended that the check valve be located to reduce the length of nonpressurized pipe in the fire department connection supply line.

A.16.12.5.1 The fire department connection should be connected to the system riser. For single systems, it is an acceptable arrangement to attach the fire department connection to any point in the system, provided the pipe size meets the requirements of 16.12.4.

A.16.12.5.5 Figure A.16.12.5.5(a) and Figure A.16.12.5.5(b) depict fire department connections to the underground pipe.

A.16.12.5.7 Obstructions to fire department connections include but are not limited to buildings, fences, posts, shrubbery, other fire department connections, gas meters, and electrical equipment.

A.16.12.7 In cases where water in the piping between the system side and the fire department connection check valve would be trapped, an auxiliary drain is required.

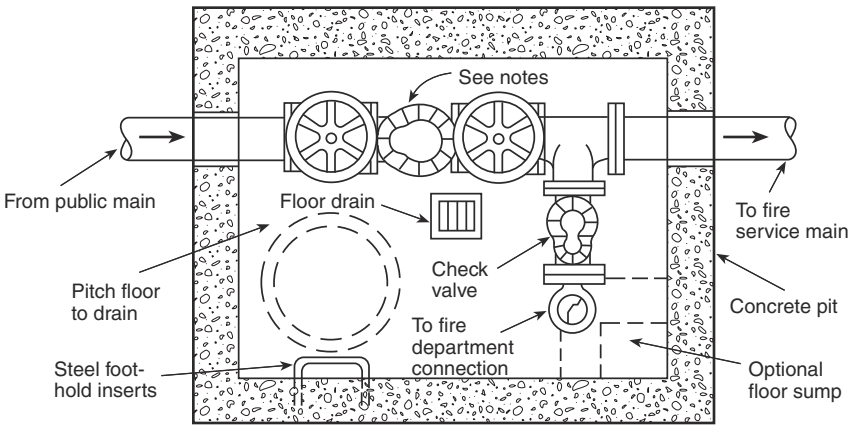
A.16.14.1 The purpose of this alarm test connection is to make sure the alarm device is sensitive enough to determine the flow from a single sprinkler and sound an alarm. The purpose of this test connection is not to ensure that water will flow through the entire system. When this test connection is installed on the upper story, and at the end of the most remote branch line, the user is able to tell that there is water flowing in one path through the system, but there is no assurance that water will flow to other branch lines. Putting the test connection at the most remote portion of the system causes the introduction of fresh oxygen into a large part of the system each time the alarm is tested and increases the corrosion that will occur in the piping. The discharge should be at a point where it can be readily observed. In locations where it is not practical to terminate the test connection outside the building, the test connection is permitted to terminate into a drain capable of accepting full flow under system pressure. In this event, the test connection should be made using an approved sight test connection containing a smooth bore corrosion-resistant orifice giving a flow equivalent to one sprinkler simulating the least flow from an individual sprinkler in the system. *[See Figure A.16.14.1(a) and Figure A.16.14.1(b).]* The test valve should be located at an accessible point and preferably not over 7 ft (2.1 m) above the floor. The control valve on the test connection should be located at a point not exposed to freezing.

A.16.14.2 See Figure A.16.14.2 and Figure A.8.2.3.7.

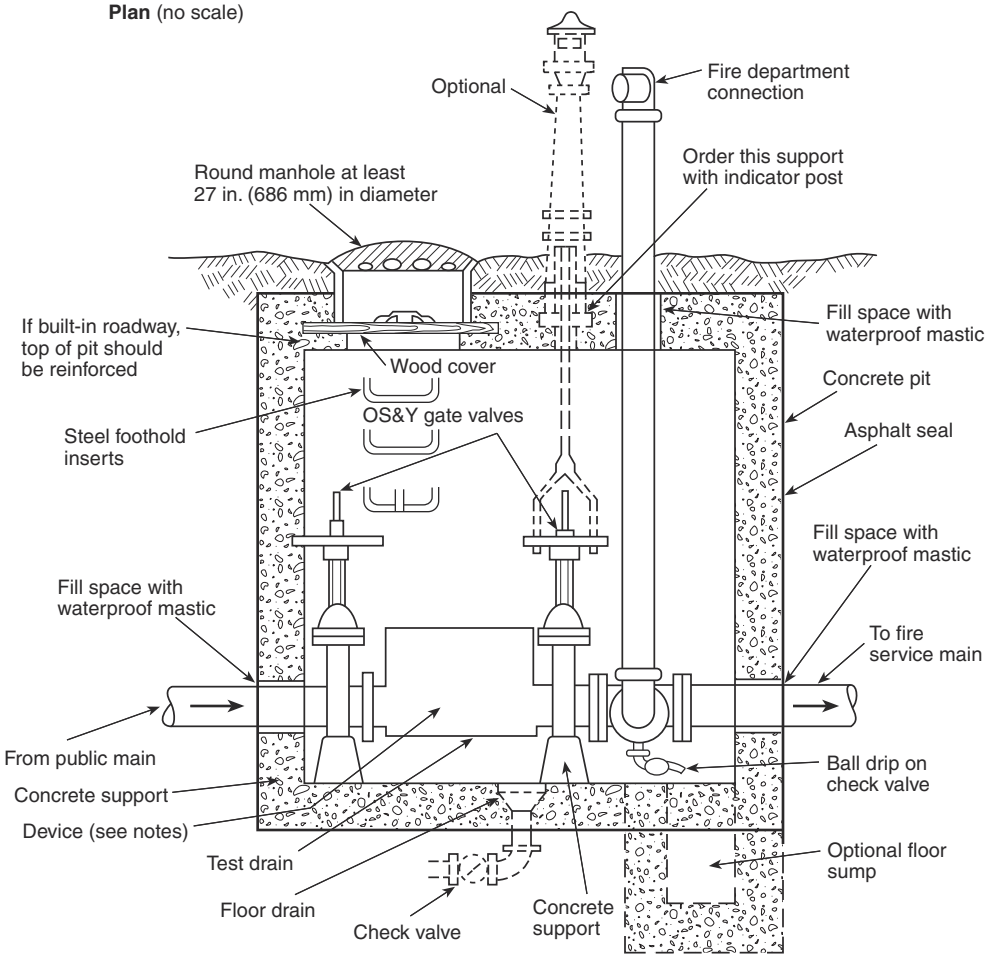
A.16.14.5 Where backflow prevention devices are installed, they should be in an accessible location to provide for service and maintenance.

A.16.14.5.1 System demand refers to flow rate and pressure. This test is only concerned with testing at the proper flow rate.

The full flow test of the backflow prevention valve can be performed with a test header or other connection downstream of the valve. A bypass around the check valve in the fire department connector line with a control valve in the normally closed position can be an acceptable arrangement. When flow to a visible drain cannot be accomplished, closed loop flow can be acceptable if a flowmeter or site glass is incorporated into the system to ensure flow. When a backflow prevention device is retroactively installed on a pipe schedule system, the revised hydraulic calculation still follows the pipe schedule method of 19.3.2 with the inclusion of friction loss for the device.



Plan (no scale)



Section (no scale)

Notes:
1. Various backflow prevention regulations accept different devices at the connection between public water mains and private fire service mains.
2. The device shown in the pit could be any or a combination of the following:
   (a) Gravity check valve
   (b) Detector check valve
   (c) Double check valve assembly
   (d) Reduced pressure zone (RPZ) device
   (e) Vacuum breaker
3. Some backflow prevention regulations prohibit these devices from being installed in a pit.
4. In all cases, the device(s) in the pit should be approved or listed as necessary. The requirements of the local or municipal water department should be reviewed prior to design or installation of the connection.
5. Pressure drop should be considered prior to the installation of any backflow prevention devices.

FIGURE A.16.12 Typical City Water Pit — Valve Arrangement.

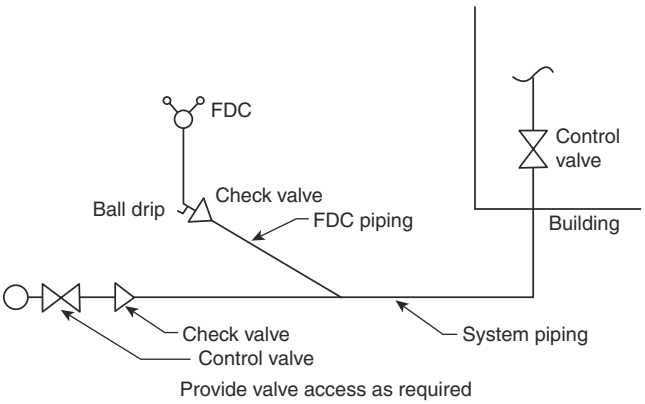


FIGURE A.16.12.5.5(a) Fire Department Connection to Underground Piping for a Single System.

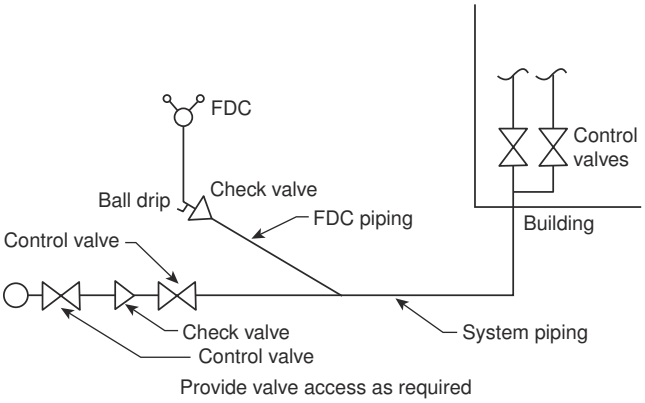
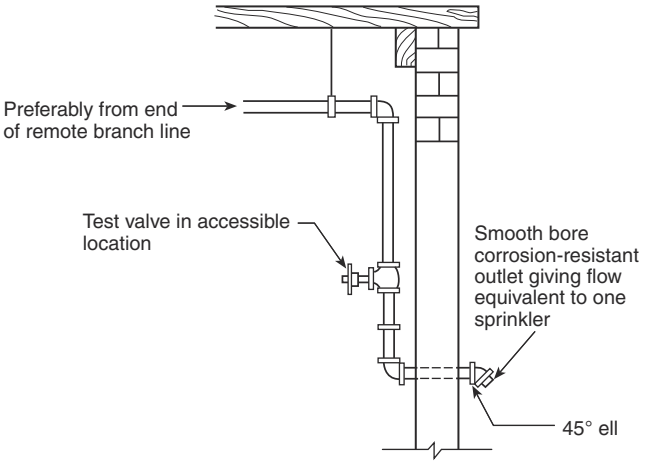


FIGURE A.16.12.5.5(b) Fire Department Connection to Underground Piping for Multiple Systems.



Note: Not less than 4 ft (1.2 m) of exposed test pipe in warm room beyond valve where pipe extends through wall to outside.

FIGURE A.16.14.1(a) System Test Connection on Wet Pipe System.

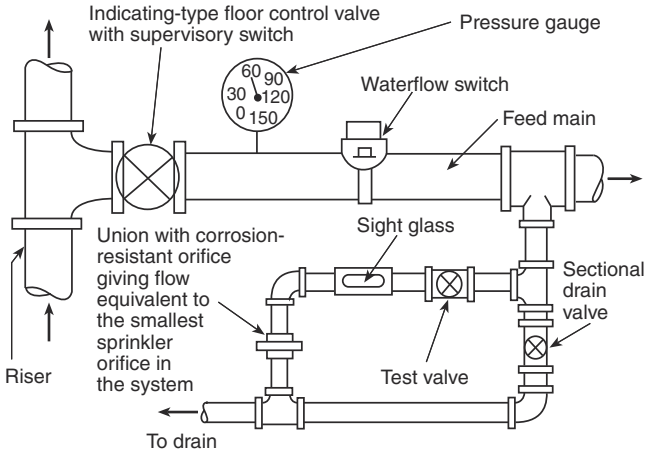
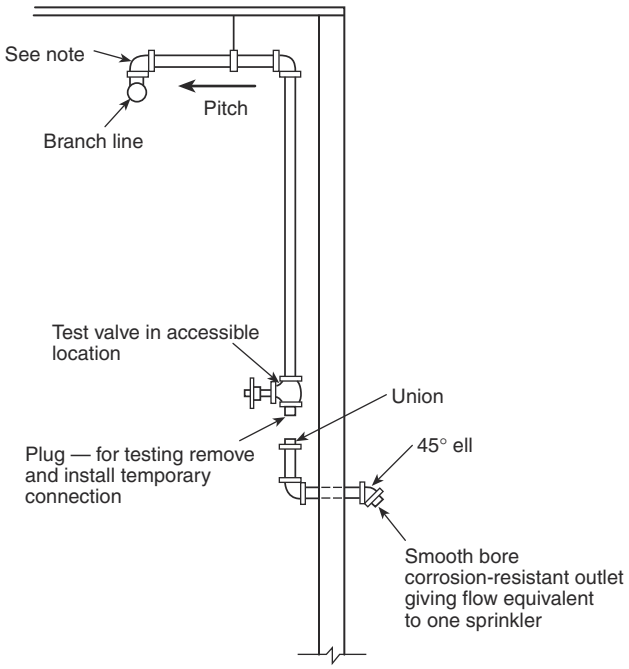


FIGURE A.16.14.1(b) Zone Control Station System Test Connection on Wet Pipe System.



Note: To minimize condensation of water in the drop to the test connection, provide a nipple-up off of the branch line.

FIGURE A.16.14.2 System Test Connection on Dry Pipe System.

A.16.15.1.1 One and one-half inch (40 mm) fire hose packs are not required unless designated by the authority having jurisdiction, as it is not likely that such hoses will be adequately maintained for safe use by first responders. Civilian workers who are not properly trained in fire-fighting techniques are expected to evacuate the building in the event of a fire.

A.16.15.1.4 This standard covers 1½ in. (40 mm) hose connections for use in storage occupancies and other locations where standpipe systems are not required. Where Class II standpipe systems are required, see the appropriate provisions of NFPA 14 with respect to hose stations and water supply for hose connections from sprinkler systems.

A.16.15.2.2 See Figure A.16.15.2.2(a) and Figure A.16.15.2.2(b).

A.16.16.2 While the use of the sprinkler system piping as the grounding electrode for the building is prohibited, *NFPA 70* requires that all metallic piping systems be bonded to disperse stray electrical currents. Therefore, the sprinkler system piping might be bonded to other metallic systems.

A.16.17 Table A.16.17 is a summary of the requirements for signs in NFPA 13.

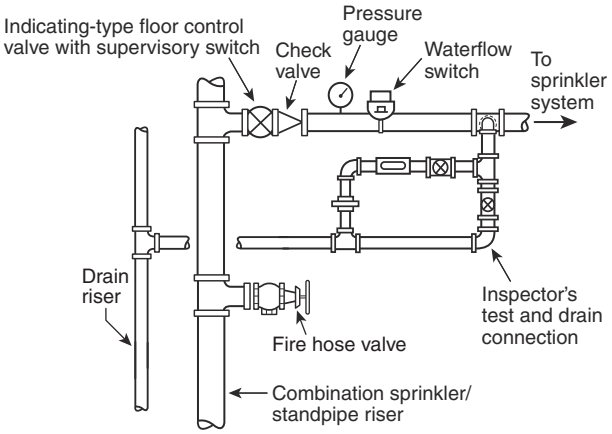


FIGURE A.16.15.2.2(a) Acceptable Piping Arrangement for Combined Sprinkler/Standpipe System. [14:Figure A.6.3.5(a)]

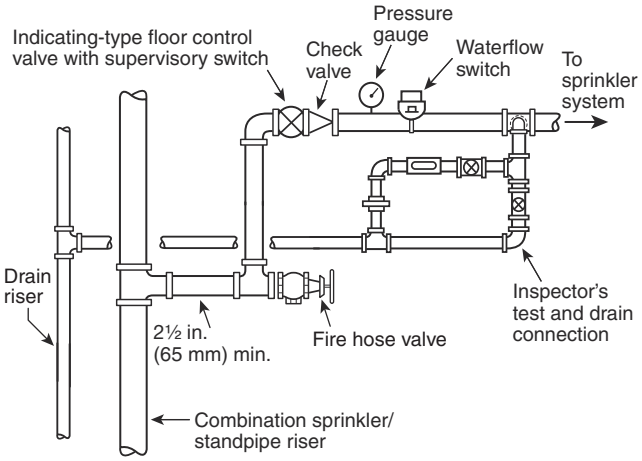


FIGURE A.16.15.2.2(b) Acceptable Piping Arrangement for Combined Sprinkler/Standpipe System. [14:Figure A.6.3.5(b)]

A.17.1 See Figure A.17.1. As an alternative to the conventional method of hanging pipe from the structure using attachments and rod, the piping can be simply laid on the structural member, provided the structure can adequately support the added load in accordance with 17.4.1.3.1 and the maximum distance between supports as required by Chapter 17 is not exceeded. Listed pipe should still be installed and supported in accordance with its listing limitations.

To prevent pipe movement, it should be secured with an approved device to the structure and located to ensure that the system piping remains in its original location and position.

A.17.1.3.1 The rules covering the hanging of sprinkler piping take into consideration the weight of water-filled pipe plus a safety factor. No allowance has been made for the hanging of non-system components from sprinkler piping. NFPA 13 provides the option to support sprinkler piping from other sprinkler piping where the requirements of 17.1.2 are met.

A.17.1.4.1 A shared support structure can be in the form of a pipe rack structure, a trapeze assembly, pipe stand, or other similar assembly. It is not the intent of this section for a building structure to be considered a shared support structure. Storage racks are not intended to be considered a shared support structure.

A.17.1.4.1.4 It is not the intent of 17.1.4.1 to apply to flexible sprinkler hose fittings or ceiling systems.

N **A.17.1.6.1** The listing requirements for water-based fire protection system hanger components include five times the weight of water-filled piping plus 250 lb (115 kg). However, once the listing is achieved, manufacturers often present their data in simple terms of what size pipe can be supported. The published loads in technical data sheets often represent one times the load of the piping that can be supported at maximum hanger spacing. If the product has been listed for use with fire protection systems, it has been shown to accommodate five times the weight of the water-filled pipe plus 250 lb (115 kg).

A.17.1.6.2 Generic items utilized with hanger rods and fasteners are not required to be listed. These include items such as bolts, screws, washers, nuts, and lock nuts.

A.17.1.6.3 Generic items utilized with hanger rods and fasteners are not required to be listed. These include items such as bolts, screws, washers, nuts, and lock nuts.

A.17.2.1.3(1) Hanger rods are intended only to be loaded axially (along the rod). Lateral loads can result in bending, weakening, and even breaking of the rod. Additional hangers or restraints could be necessary to minimize nonaxial loads that could induce bending or deflection of the rods. See Figure A.17.2.1.3(1) for an example of additional hangers utilized to minimize nonaxial loads.

A.17.2.2 In areas that are subject to provisions for earthquake protection, the fasteners in concrete will need to be prequalified. See 18.7.8 for information.

A.17.2.2.9.3 The ability of concrete to hold the studs varies widely according to type of aggregate, quality of concrete, and proper installation.

A.17.2.3.1 Powder-driven studs should not be used in steel of less than $^{3}/_{16}$ in. (5 mm) total thickness.

Table A.16.17 Sprinkler System Signage Summary

Section	Sign Location	Sign Information/Requirements
16.9.12	Control valves Drain valves Test connection valves	Identification sign Sign must be made of weatherproof metal or rigid plastic and attached with corrosion-resistant wire or chain
8.6.1.4 and 8.6.1.5	Antifreeze system main valve	Indicate the following: Antifreeze manufacturer Antifreeze type Antifreeze concentration
16.9.3.5	Control valves	Indicate valve function Indicate system being controlled
16.10.5.3.7	Dry valve Preaction valve	Number of low point drains Location of each drain
16.12.5.6	Fire department connections not serving the whole building	Indicate portion of the building served by the fire department connection
16.12.5.8	All fire department connections	Indicate systems served by the fire department connection Indicate system pressure demand [for systems requiring more than 150 psi (10 bar)] Letters must be 1 in. (25 mm) in height
28.5	Alarm valve Dry pipe valve Preaction valve Deluge valve	Indicate the following: Location of the design area or areas Size (area) of or number of sprinklers in the design area Discharge densities over the design area or areas Required flow and residual pressure demand at the base of the riser Occupancy classification or commodity classification and maximum permitted storage height and configuration Hose stream allowance The installing contractor Sign must be made of weatherproof metal or rigid plastic and attached with corrosion-resistant wire or chain
28.6	System control riser Antifreeze loops Auxiliary systems Control valves	Indicate the following: Name and location of the facility protected Occupancy classification Commodity classification Presence of high-piled and/or rack storage Maximum height of storage planned Aisle width planned Encapsulation of pallet loads Presence of solid shelving Flow test data Presence of flammable/combustible liquids Presence of hazardous materials Presence of other special storage Location of venting valve Location of auxiliary drains and low point drains on dry pipe and preaction systems Sign must be made of weatherproof metal or rigid plastic and attached with corrosion-resistant wire or chain
30.2.7.5	Fire department connection (FDC)	18 in. × 18 in. (450 mm × 450 mm) sign FDC symbol from NFPA 170 Located at connection in plain sight from shore access point
A.16.11.2	Central station, auxiliary, remote station, or proprietary protective signaling systems	Recommended: Located near the device Direct people to call police or fire department when bell rings

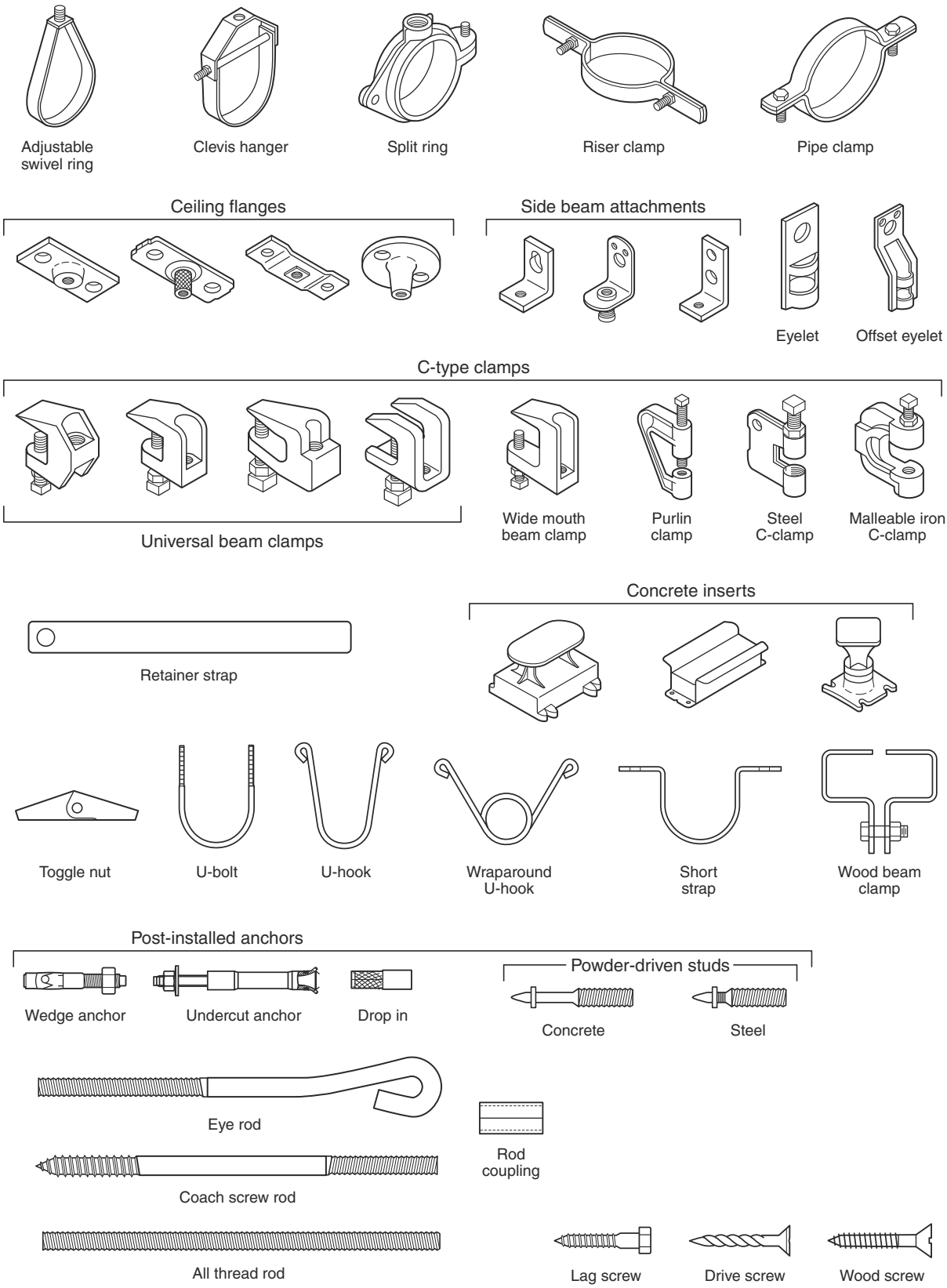


FIGURE A.17.1 Common Types of Acceptable Hangers.

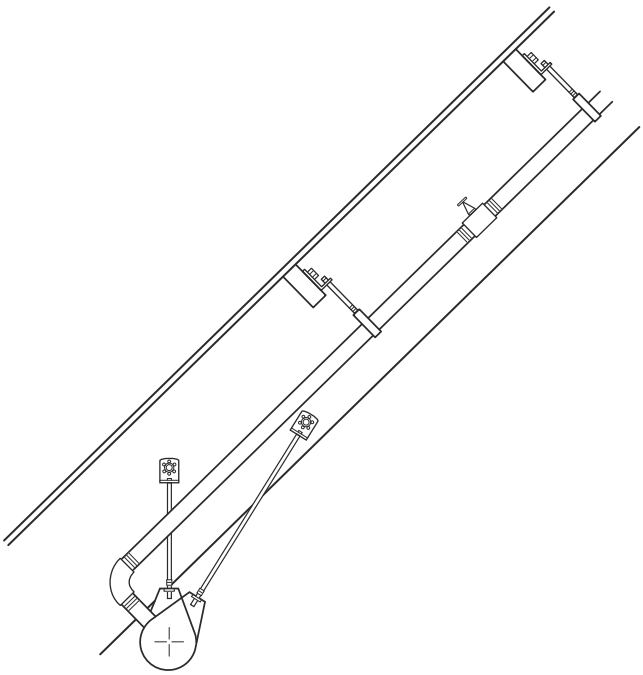


FIGURE A.17.2.1.3(1) Example of Additional Hangers Utilized to Minimize Nonaxial Loads.

A.17.3 Table 17.3.1(a) assumes that the load from 15 ft (5 m) of water-filled pipe, plus 250 lb (115 kg), is located at the midpoint of the span of the trapeze member, with a maximum allowable bending stress of 15 ksi (111 kg). If the load is applied at other than the midpoint, for the purpose of sizing the trapeze member, an equivalent length of trapeze can be used, derived from the following formula:

[A.17.3]

$$L = \frac{4ab}{a+b}$$

where:
L = equivalent length
a = distance from one support to the load
b = distance from the other support to the load

Where multiple mains are to be supported or multiple trapeze hangers are provided in parallel, the required or available section modulus can be added. The table values are based on the trapeze being a single continuous member.

A.17.3.5 Hanger components are sized based upon an ultimate strength limit of 5 times the weight of water-filled pipe plus 250 lb (115 kg). The section moduli used to size the trapeze member are based on a maximum bending stress, which provides an acceptable level of safety that is comparable to that of the other hanger components.

A.17.4 To enhance permanence, proper hanger installation is important. Installation procedures should meet industry standards of practice and craftsmanship. For example, hanger assemblies are straight, perpendicular to the pipe, uniformly located, and snug to the structure with fasteners fully engaged.

A.17.4.1.1.1 Fasteners used to support sprinkler system piping should not be attached to ceilings of gypsum or other similar soft material.

A.17.4.1.3 The method used to attach the hanger to the structure and the load placed on the hanger should take into account any limits imposed by the structure. Design manual information for pre-engineered structures or other specialty construction materials should be consulted, if appropriate.

System mains hung to a single beam, truss, or purlin can affect the structural integrity of the building by introducing excessive loads not anticipated in the building design. Also, special conditions such as collateral and concentrated load limits, type or method of attachment to the structural components, or location of attachment to the structural components might need to be observed when hanging system piping in pre-engineered metal buildings or buildings using other specialty structural components such as composite wood joists or combination wood and tubular metal joists.

The building structure is only required to handle the weight of the water-filled pipe and components, while the hangers are required to handle 5 times the weight of the water-filled pipe. In addition, a safety factor load of 250 lb (115 kg) is added in both cases. The difference in requirements has to do with the different ways that loads are calculated and safety factors are applied.

When sprinkler system loads are given to structural engineers for calculation of the structural elements in the building, they apply their own safety factors in order to determine what structural members and hanging locations will be acceptable.

In contrast, when sprinkler system loads are calculated for the hangers themselves, there is no explicit safety factor, so NFPA 13 mandates a safety factor of 5 times the weight of the pipe.

A.17.4.1.3.3 Examples of areas of use include cleanrooms, suspended ceilings, and exhaust ducts.

A.17.4.1.3.3.3 The committee evaluation of flexible sprinkler hose fittings supported by suspended ceilings was based on information provided to the committee showed that the maximum load shed to the suspended ceiling by the flexible hose fitting was approximately 6 lb (2.7 kg) and that a suspended ceiling meeting ASTM C635, *Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems of Acoustical Tile and Lay-In Panel Ceilings*, and installed in accordance with ASTM C636, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels*, can substantially support that load. In addition, the supporting material showed that the flexible hose connection can be attached to the suspended ceilings because it allows the necessary deflections under seismic conditions.

A.17.4.1.3.3.4 An example of language for the label is as follows:

CAUTION: DO NOT REMOVE THIS LABEL.

Relocation of this device should only be performed by qualified and/or licensed individuals that are aware of the original system design criteria, hydraulic criteria, sprinkler listing parameters, and knowledge of the state and local codes including NFPA 13 installation standards. Relocation of the device without this knowledge could adversely affect the performance of this fire protection and life safety system.