

NFPA 13E

Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems

2000 Edition



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An International Codes and Standards Organization

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NFPA 13E

Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems

2000 Edition

This edition of NFPA 13E, *Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*, was prepared by the Technical Committee on Fire Service Training and acted on by the National Fire Protection Association, Inc., at its November Meeting held November 14–17, 1999, in New Orleans, LA. It was issued by the Standards Council on January 14, 2000, with an effective date of February 11, 2000, and supersedes all previous editions.

This edition of NFPA 13E was approved as an American National Standard on February 11, 2000.

Origin and Development of NFPA 13E

In 1933 the NFPA adopted an informative brochure that was prepared by the Committee on Field Practice and entitled “Use of Automatic Sprinklers by Fire Departments.” It was published as a separate pamphlet and reprinted in 1936. The work formerly carried on by the Committee on Field Practice was distributed to a number of new committees in 1953, and at that time the Committee on Standpipes and Outside Protection was given responsibility for this brochure. A subcommittee of the Committees on Standpipes and Outside Protection, Automatic Sprinklers, Fire Department Equipment, and Fire Service Training prepared a revision, “Fire Department Operations in Protected Properties,” which, on recommendation of the four committees, was adopted as an informative report at the NFPA Annual Meeting in Detroit on May 16, 1961. The informative report was published and circulated as a separate pamphlet, No. SPI-1961, but was not included in the annual volumes of the *National Fire Codes*®.

Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems, NFPA 13E, was adopted with minor revisions by the NFPA at its 1966 Annual Meeting on recommendation of the Committee on Standpipes and Outside Protection. It was amended and updated in 1973, 1978, 1983, 1989, and 1995. The changes made by the Technical Committee on Fire Service Training in the 2000 edition of this document align its text with changes made to the current edition of NFPA 13, *Standard for the Installation of Sprinkler Systems*. Chapters 5 through 8, which present new pre-incident planning and fireground operational considerations for fire personnel, are new to this edition.

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on all fire service training techniques, operations, and procedures to develop maximum efficiency and proper utilization of available personnel. Such activities can include training guides for fire prevention, fire suppression, and other missions for which the fire service has responsibility

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Appendix A.

Information on referenced publications can be found in Chapter 9 and Appendix B.

Chapter 1 Administration

1-1 Scope. This recommended practice provides basic procedures and information for use in fire department operations concerning properties equipped with certain fixed fire protection systems. The fixed systems covered in this recommended practice are interior automatic sprinkler systems, exterior sprinkler systems, and standpipe systems.

1-2 Purpose.

1-2.1 The purpose of this recommended practice is to assist fire departments in developing training programs and planning effective operations for supporting certain fixed fire protection systems in buildings in which fire can occur. Recommended practices are given for the adequate support and use of sprinkler and standpipe systems.

1-2.2 Nothing herein is intended to restrict any jurisdiction from exceeding these minimum suggestions.

1-3 Definitions.

1-3.1* Approved. Acceptable to the authority having jurisdiction.

1-3.2* Authority Having Jurisdiction. The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

1-3.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

1-3.4* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

1-3.5 Recommended Practice. A document that is similar in content and structure to a code or standard but that contains only nonmandatory provisions using the word “should” to indicate recommendations in the body of the text.

1-3.6 Should. Indicates a recommendation or that which is advised but not required.

Chapter 2 Properties Protected by Automatic Sprinkler Systems

2-1* General. Fire department administrations should use this record of effectiveness and current data to promote these systems and should focus on actively supporting the operations of these systems.

Fire department personnel should be knowledgeable of and prepared to deal with the following three principal causes of unsatisfactory sprinkler performance:

- (1) A closed valve in the water supply line
- (2) The delivery of an inadequate water supply to the sprinkler system
- (3) Occupancy changes not suitable for the installed system

The fire department should correct these situations by implementing effective departmental pre-incident planning, inspections, and other appropriate actions and by performing an appropriate maintenance and testing program on the installed system. Sprinkler systems initially designed for a low-heat-release product or intended only to accommodate low storage or a change to a high-heat commodity or to a significant increase in storage height or in storage configurations can result in unsuccessful sprinkler performance, so the fire department or authority having jurisdiction should take steps to correct these problems.

Whenever automatic sprinklers are installed within the jurisdiction, the fire department training program should include a course on the fundamentals of automatic sprinkler systems. The fire department should recognize the following:

(a) When properly designed, installed, maintained, and supported by the fire department, a sprinkler system can apply water directly to the fire in a more effective manner than can the fire department using manual fire suppression methods.

(b) Not all sprinkler systems are equally effective in their performance. Systems might not have been properly maintained or might not be effective for the current occupancy.

(c) Changing conditions, including the following, might have reduced the required water supply calculated for sprinklers by the system designer:

- (1) Installation of a backflow preventor
- (2) Increased demand in area
- (3) Partially closed valves
- (4) Use of hose streams in larger volumes than anticipated
- (5) Deterioration of the grid system

(d) Changes in occupancies and commodity storage packaging and configuration methods might rely heavily on fire department support for the sprinkler system. Knowledge of sprinklered buildings within the response area will enable fire companies to be alert for the types of changes described in 2-1(c). These changes should be referred to the authority having jurisdiction for determining the need for sprinkler system modification.

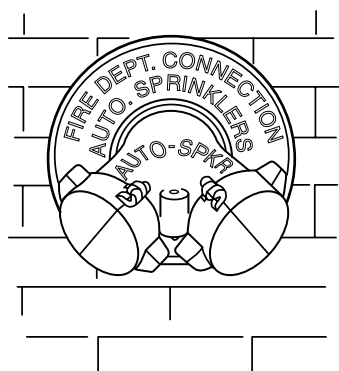
(e) Sprinkler systems are installed in single-family and multiple-family dwellings as well as other types of residential occupancies. Some of these systems might not have the traditional fire department connection and other traditional exterior building fittings or dedicated separate water supplies.

2-2* Inspection and Pre-Incident Planning.

2-2.1 Fire personnel should thoroughly understand the following about properties protected by automatic sprinklers:

- (1) The construction, contents, and layout of the buildings, the nature of the occupancies protected by automatic sprinklers, the extent of this protection, and the type of sprinkler systems
- (2) The water supply to the sprinklers, including the source and type of supply, the flow and pressure normally available, and the anticipated duration of the supply available
- (3) The location of all sprinkler control valves, the area controlled by each valve, and the consequence of shutting off each valve
- (4) The location of fire department connections to sprinkler systems, the specific area each connection serves, and the water supply, hose, and pumper layout that will be used to feed the sprinkler connections [See Figure 2-2.1(4).]
- (5) The location of water supplies for hand lines that can be used without jeopardizing the water supply to the operating sprinklers
- (6) An alternative means for supplying water to the system in case of damage to the fire department connection
- (7) The location of spare or replacement sprinkler heads
- (8) The location of water flow indicators and annunciator panels associated with the systems
- (9) Key holder information for contact in case of emergency

FIGURE 2-2.1(4) Fire department connection to automatic sprinkler systems.



2-2.2 The company assigned primary responsibility for charging the sprinkler connection during pre-incident planning or annual inspections should hook up to the fire department connection to verify hose thread compatibility. The system should also be tested with air or water to verify integrity.

2-2.3 During periodic inspections, fire personnel should ascertain the location and accessibility of fire department connections and connections to the water source, as well as the availability of an adequate water supply.

2-2.4 Arrangements should be made with the property owners for entering the building as quickly as possible following activation of sprinkler systems when the building is unattended, in order to avoid using forcible entry equipment and the resulting damage from its use.

2-3 Fireground Operations in Sprinklered Properties.

2-3.1 Each fire department responding to properties protected by automatic sprinkler systems should implement stan-

dard operating procedures for handling fires in sprinklered buildings. The incident commander should ensure that these procedures are carried out as promptly and efficiently as possible.

2-3.2 Fire fighters operating in properties protected by automatic sprinkler systems should base operations on a thorough knowledge of the property gained from prior inspection and pre-incident planning.

2-3.3 A sprinkler system should not be shut down to improve visibility.

2-3.4* When arriving at a property protected by an automatic sprinkler system, fire companies should take prompt action to supply the system. [See Figures 2-3.4(a) and 2-3.4(b).]

FIGURE 2-3.4(a) Water supply to the sprinkler system.

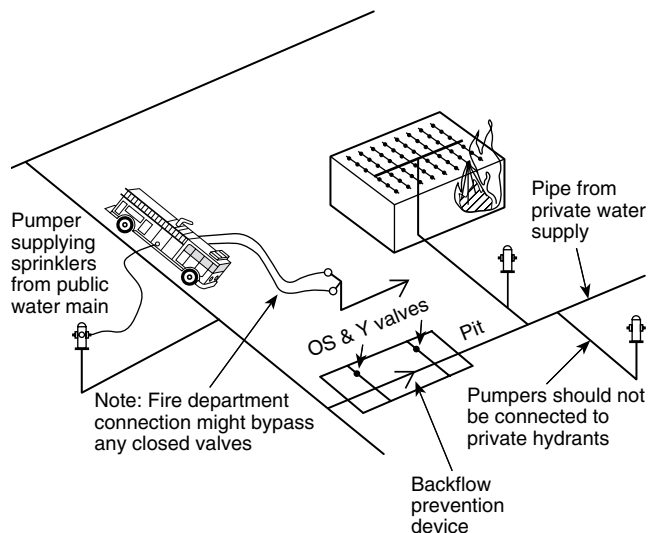
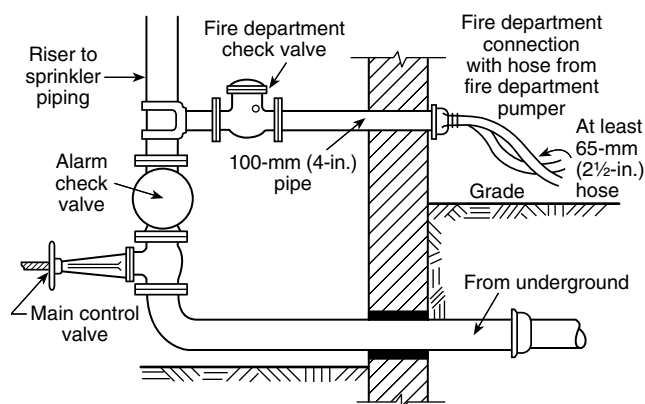


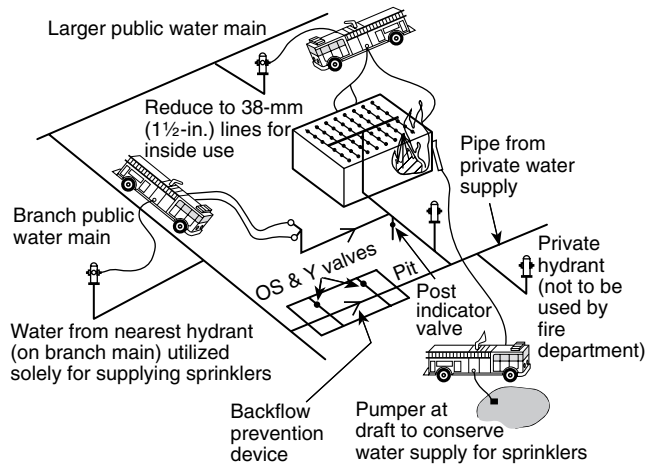
FIGURE 2-3.4(b) Water supply to the fire department connection.



A minimum of one sprinkler supply line should be connected to the fire department connection and should be supplemented according to fire conditions. The supply line should be pumped and the line charged to a pressure of 10.0 bar (150 psi), unless the system is posted for a different pressure. Additional hose lines should be stretched to the fire

area as directed by the incident commander in charge. [See Figure 2-3.4(c).]

FIGURE 2-3.4(c) Pumper supply options that should be considered.



2-3.5 Where hose streams will be used, water should be taken from sources that do not reduce the sprinklered protection. Pumpers should be supplied by one of the following methods:

- (1) Connecting pumpers to large mains from which flow tests have indicated adequate flows to supply both sprinklers and the required hose streams
- (2) Connecting pumpers to water mains not needed for sprinkler supply
- (3) Drafting pumpers from static sources

2-3.6 Immediately after all water supply connections have been completed and the fire department connection has been charged, the incident commander should verify that water is flowing into the sprinkler system. If water is not flowing, the incident commander should take action to verify that all accessible control valves are open. If a valve is found to be closed, the incident commander should be notified promptly and the valve should be opened fully unless it is tagged "Closed for Repairs." Valves found closed should be reported to the fire investigator after the incident.

If the system is supplied or augmented by a fire pump, a fire fighter should also be assigned to verify that the pump is in operation.

2-3.7 When possible, fire departments should avoid drafting from open water sources into sprinkler systems and standpipe systems where such systems are connected to potable water supplies unless appropriate backflow protection equipment is installed.

2-3.8 Personnel performing ladder company functions should provide ventilation as needed in order to avoid delay in advancing hose lines to complete extinguishment. (See Section 2-6 for other considerations regarding ventilation procedures.)

Salvage covers should be used to protect those items or areas likely to be affected by operating sprinklers, hose lines, or both. Special attention should be given to those areas on floor levels below the area of sprinkler operation.

2-3.9 Fire personnel should be aware that residential sprinkler piping is not tested to the same level as commercial sprinkler piping.

Therefore, a residential sprinkler system should not be pressurized to more than water main pressure if this system has a fire department connection.

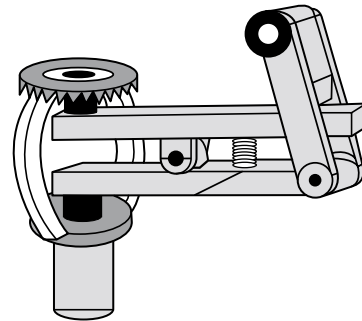
2-4 Post-Fire Operations.

2-4.1 Automatic sprinklers should not be shut off until the fire has been extinguished. If there is a sectional or floor fire control valve, this valve should be closed in lieu of the main valve. A fire fighter with a means of communication should be assigned to remain at the valve until overhaul is completed. Orders should also be given to the pump operator to shut down the lines connected to the fire department connection, because these lines can bypass the main sprinkler valve and, in the absence of a floor valve, water will flow until the pump discharge gates are closed.

Where a combined sprinkler-standpipe system is installed, the hose lines should be charged and maintained charged until fire overhaul is completed.

Where only a few sprinkler heads are operating, sprinkler tongs, tapered wooden wedges, or dowels should be used to immediately stop the flow from the opened heads without shutting off the entire system. (See Figure 2-4.1.)

FIGURE 2-4.1 Sprinkler head with sprinkler wedge installed.



2-4.2 Routine overhaul should be provided and a cause and origin investigation should be initiated.

2-4.3 When the fire is extinguished and overhaul is completed, the lines from the pumper to the sprinkler system fire department connection should be ordered disconnected.

2-4.4 Where appropriate, the fire department should assist in restoring the sprinkler system. Because actions to restore a sprinkler system can present potential consequences for improper or negligent actions, each fire department should review its policy on this matter. Sprinkler heads that were exposed to high heat conditions during a fire should be examined by a qualified sprinkler installer and replaced as needed.

2-4.5 Code enforcement authorities should be notified in jurisdictions that mandate automatic sprinklers as part of a code-required system. If the sprinkler system cannot be restored to operating condition by the time the fire department leaves the premises, the code enforcement agency should be promptly notified of the structure's noncompliance status. The building owner or representative should also be notified.

2-4.6 The fire prevention bureau should be notified of any fire involving a building with automatic sprinklers.

2-5 Reports.

2-5.1 The officer in charge should include data regarding the operation of the sprinkler system in the incident report.

2-5.2 Past incident analysis of the fire department operations and the performance of the automatic sprinkler system should be reported to improve future operations at sprinklered properties.

The following information should be gathered to use in the analysis process:

- (1) The location of operating sprinkler heads
- (2) The number of sprinkler heads operating
- (3) The result of sprinkler operation
- (4) The reason for any unsatisfactory operation
- (5) Employee assigned to check control valve
- (6) Whether the fire department connected to the sprinkler system, and if not, the reason. The company and engine number that connected to the sprinkler system
- (7) The number of hose lines used
- (8) The size of hose lines used (Some departments now use LDH lines to supply fire department connections.)
- (9) Whether water was pumped into the system, and for how long and at what pressure
- (10) Whether the valve was closed after the fire, and which employee ordered that the valve be closed
- (11) The number of sprinkler heads replaced by the fire department
- (12) The type of heads installed
- (13) The number of heads operated
- (14) Whether sprinkler protection was fully restored and by whom
- (15) The actions taken to restore service
- (16) Whether the private water supply to sprinklers operated satisfactorily
- (17) Whether the fire prevention bureau was notified
- (18) Whether the representative of management was notified, as well as the names of the employee making notification and of those notified

2-6 Ventilation in Storage Occupancies.

2-6.1 Fire department personnel should study occupancies with a wide variety of configurations and a wide range of storage commodities to determine whether there is a need for special procedures, particularly where storage heights are in excess of 3.66 m (12 ft) because, in some cases, routine ventilation procedures in the early stages of a fire can hinder effective sprinkler operation. The fire department should discuss its pre-incident plan for these types of occupancies with the occupant, sprinkler designer, and insurance carrier to determine whether a modification in procedures is appropriate.

2-6.2* Where search and rescue operations have been completed prior to the fire department's performing ventilation work, the incident commander should allow the automatic sprinklers to continue to operate without further ventilation.

Chapter 3 Properties Protected by Exterior Sprinklers for Protection Against Exposure Fires

3-1 General.

3-1.1* Fire department personnel should be aware that many buildings or properties that have a severe exposure problem are equipped with exterior sprinkler systems designed to pro-

vide a water curtain capable of shielding the property from fires in other buildings or in storage areas.

3-1.2 Fire department training and operational protocols should be in place so that, when used properly, sprinkler heads for exterior protection (specially designed for a water curtain effect) and systems will prevent an exposure fire from entering the building.

3-2 Pre-Incident Planning. In properties having exterior sprinkler protection, fire personnel and officers assigned to the first-due companies should thoroughly understand the following:

- (1) The building's construction and layout, the nature of the occupancy protected by the exterior sprinkler, and the extent of the protection and the type and operation (automatic or manual) of the system
- (2) The water supply to the sprinklers, including the source and type of supply, the flow and pressure normally available, and the anticipated duration of the available supply
- (3) The location of all sprinkler control valves, what each valve controls, and the consequence of shutting off each valve
- (4) The location of fire department connections to the system, the specific area each connection serves, and the water supply, hose, and pumper layout that will be used to feed the sprinkler connections
- (5) The specific company assignment having the primary responsibility for charging the sprinkler connection
- (6) The location of water supplies for hand lines that can be used without jeopardizing the water supply to operation sprinklers
- (7) An alternative means for supplying water to the system in case of damage to the fire department connection
- (8) The location of spare or replacement sprinkler heads
- (9) Keyholder information for contact in case of emergency

3-3 Water Supply for Fire Fighting.

3-3.1 A sketch should be prepared showing the location of the control valves, the fire department supply connections, and the hydrants to be used for pumping into the system. Where there is an exposure fire problem, it should be assumed that there could be a major fire that will also require a number of hose streams for manual fire fighting. It should also be assumed that there might be standard automatic sprinkler systems in the fire area that must be supplied with lines from pumpers as their water supplies.

3-3.2 When possible, fire departments should avoid drafting from open water sources into sprinkler systems and standpipe systems where such systems are connected to potable water supplies unless appropriate backflow protection equipment is installed.

3-4 Fireground Operation Involving Exterior Sprinklers.

3-4.1* The incident commander in charge should ensure that exterior systems are used to fulfill their intended purpose and should be aware of the existence of the system and the means of water supply.

3-4.2 The incident commander should determine as quickly as possible whether exterior sprinklers are operating. If the system is manually operated, a fire department member with a portable radio should immediately be sent to open the valve in case the exterior sprinklers are needed later. In some cases,

several valves control different exposed parts of a protected building, so the correct valve must be opened. Care should be taken to conserve the water supply and minimize potential water damage by shutting off the exterior sprinklers when they are no longer required.

3-4.3 Where a fire department connection is provided, an engine company should pump into the connection.

3-4.4 The incident commander in charge should be responsible for the following:

- (1) Ordering fire personnel into the exposed buildings to ascertain that all windows are closed and fire has not extended into the buildings concerned
- (2) Setting up fire department lines in the exposed buildings if the exposure is severe. Standpipe facilities can be used if available
- (3) Sending fire personnel to the roof to make certain that no part of the roof structure has ignited
- (4) Ordering salvage operations in exposed buildings
- (5) Ordering exterior sprinklers to be shut off and drained when no longer needed
- (6) Ordering the system to be restored (*See 2-4.4.*)

Chapter 4 Properties Protected by Standpipe Systems

4-1 Inspection and Pre-Incident Planning.

4-1.1 Personnel responsible for inspection and pre-incident planning should be aware that many properties have standpipe systems serving fire hose outlets in various parts of one or more buildings and that standpipe systems can be used by the fire personnel to place streams in service quickly in areas that cannot be reached conveniently with hose lines that are directly connected to pumpers or hydrants outside of buildings.

4-1.2 Standpipe hose threads should be checked for compatibility with fire department threads.

4-1.3* Fire personnel should determine the source and reliability of the water supply and follow the piping, while noting the location of control valves.

4-1.4 Where the fire department is required to supply hose outlets several hundred feet from the fire department connection, plans should be made in advance to provide the required pressure and fire flow based on the size of hose, the length of pipe, the maximum height of standpipe outlets, and the number of streams to be supplied.

4-1.5 Pre-incident planning should include identification of pressure regulation devices installed within the system. For those standpipe systems with devices that regulate the pressure available to the hose lines attached to the system, fire personnel should be aware of the devices and their placement on standpipe systems, and they should know how to adjust them so that they work properly with the hose lines and nozzles that can be attached to them. Pressure regulation device settings should be compatible with the hose and nozzles used by the local fire department.

4-1.6 Pressure regulation devices should be tested annually for proper operation.

4-2 Water Supply for Fire Fighting.

4-2.1* Fire personnel should be familiar with the variety of supply sources for water used in fire fighting, including standpipe systems with water supplied by public or private water mains, as well as fire pumps, gravity tanks, pressure tanks, fire department connections, or combinations of these, in order to provide water at adequate pressure and quantity at the outlets.

4-2.2 Fire personnel should determine the needed pressure and quantity of water at the highest outlets, and they should develop procedures to provide appropriate amounts of water for fire fighting when using the system.

4-2.3 Alternative means of supplying water to the fire area should be identified in case the system is unusable or needs to be supplemented at the time of a fire.

4-2.4 When possible, fire departments should avoid drafting from open water sources into sprinkler systems and standpipe systems where such systems are connected to potable water supplies unless appropriate backflow protection equipment is installed.

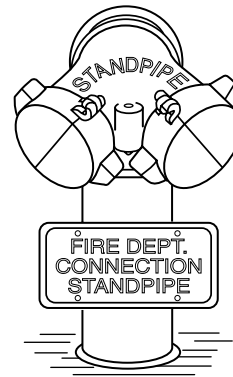
4-3 Fireground Operations Involving Properties Protected by Standpipe Systems.

4-3.1* Fire department personnel should carefully plan operations in properties protected by standpipe systems designed to supply fire department hose streams. These procedures should be similar to operations in buildings protected by automatic sprinklers.

4-3.2 Standpipes should be utilized when fires occur on floors above the reach of ground or aerial ladders and when valuable time will be lost in stretching lines up stairways. Careful pre-incident and on-scene fireground planning should be performed to ensure successful operations.

4-3.3 Where standpipe systems provide fire department connections, lines from a pumper supplied by a water main should be connected and charged to the pressure required to give the desired working pressure on the standpipe outlets being used. Where there are several independent standpipes for fire department use in the fire area, each standpipe should be charged. (*See Figure 4-3.3.*)

FIGURE 4-3.3 Standpipe connection.



4-3.4* When pumping to a fire department standpipe connection, the pump operator should consider the following factors when calculating pump discharge pressure:

- (1) Friction loss in the hose line between the pump and the standpipe connection
- (2) Friction loss in the standpipe system
- (3) Pressure loss due to elevation of the nozzle(s)
- (4) Number and size of attack lines operating from the standpipe
- (5) Pressure desired at the nozzle(s)

Pump discharge pressure in excess of 14 bar (200 psi) should not be used unless the standpipe system has been designed to withstand higher pressures. Fire suppression personnel should be familiar with options and acceptable practices available to them in response to varying configurations and locations of standpipe outlets.

4-3.5 Hose or “house lines” attached to standpipe outlets should not be used except in the case of extreme emergency. Fire personnel should provide hose and nozzles of appropriate size and length along with proper accessory equipment for the anticipated fire conditions.

4-3.6 Limitations of communication devices, as well as the essential ability to maintain effective portable radio communications between the incident command post and officers on the upper floors, should be identified and resolved during pre-incident planning.

4-3.7 Where private water supplies serve the standpipe system, fire personnel should make certain that supply valves are open and private fire pumps, if any, are operating properly.

4-3.8 Before proceeding up stairs, fire personnel should ensure that all hose outlet valves on lower floors are closed.

Chapter 5 Impairments

5-1* Impairment Procedures. When a sprinkler system or wet-hose standpipe system is found to be impaired, fire department procedures should be followed as covered in Chapter 11 of NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.

Each building owner should appoint an impairment coordinator for the purpose of authorizing planned impairments and dealing with emergency impairments. When an impairment occurs, the following procedure should be performed by the impairment coordinator:

- (1) Determine the extent and expected duration of the impairment.
- (2) Determine the increased risk in the areas of the building affected.
- (3) Submit recommendations to the owner or manager of the building for dealing with the risk.
- (4) Notify the fire department and the dispatch center for emergency services.
- (5) Notify the insurance carrier, the alarm company, the building owner or manager, and other involved authorities having jurisdiction.
- (6) Notify the supervisors in the area being affected.
- (7) Install an impairment tag on the affected control valve and fire department connection.
- (8) Assemble the necessary tools and materials to make the repair as soon as possible.

Once the impairment has been repaired and the system restored to service, the following steps should be taken:

- (1) Conduct necessary inspections and tests to verify that the system is restored to operational condition.
- (2) Advise supervisors that the system has been restored.
- (3) Advise the fire department and dispatch center that protection has been restored.
- (4) Notify the insurance carrier, the building owner or manager, the alarm company, and any other authorities having jurisdiction or concerned parties that the system has been restored.
- (5) Remove the impairment tags.

Chapter 6 Reliability of Systems

6-1 System Status. Fire department personnel should be thoroughly knowledgeable of the reliability of the system(s). If the condition of the system(s) is questionable, a change in pre-plans, procedures, or tactics should be required. A greater commitment of resources to the initial fire attack should be considered.

Chapter 7 Buildings Under Construction

7-1 Site Visits. Fire department personnel should provide continuous pre-plan visits to high-rise buildings under construction to evaluate special needs in accordance with the provisions of Chapter 5 of NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.

Chapter 8 Inspection and Testing Requirements

8-1 Inspection, Testing, and Maintenance for Sprinkler and Standpipe Systems. Existing buildings systems should be evaluated by fire department or other appropriate building personnel in accordance with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.

Chapter 9 Referenced Publications

9-1 The following documents or portions thereof are referenced within this recommended practice and should be considered as part of its recommendations. The edition indicated for each referenced document is the current edition as of the date of the NFPA issuance of this recommended practice. Some of these documents might also be referenced in this recommended practice for specific informational purposes and, therefore, are also listed in Appendix B.

9-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 1998 edition.

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, 1996 edition.

Appendix A Explanatory Material

Appendix A is not a part of the recommendations of this NFPA document but is included for informational purposes only. This appendix contains explanatory material, numbered to correspond with the applicable text paragraphs.

A-1-3.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

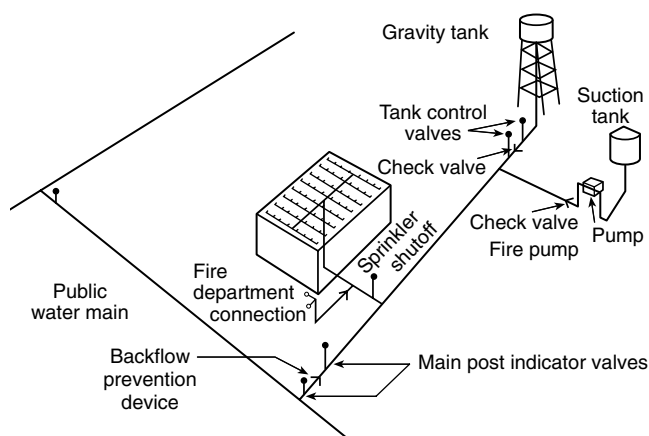
A-1-3.2 Authority Having Jurisdiction. The phrase “authority having jurisdiction” is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A-1-3.4 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A-2.1 Records of the National Fire Protection Association and other fire protection associations around the world clearly indicate the highly effective performance of automatic sprinkler systems.

A-2.2 Figure A-2-2 shows a typical layout of water supply and sprinkler system features serving a building.

FIGURE A-2-2 A typical layout of a water supply system for automatic sprinkler systems.



A-2-3.4 It might be necessary to alter the pressure of 10.0 bar (150 psi) to properly supply foam-water sprinkler systems, hydraulically calculated sprinkler systems, or high-rise systems. Performance of certain systems, such as foam-water sprinkler systems or hydraulically calculated sprinkler systems, can be adversely affected by increased pressures beyond the design limits of the system.

A-2-6.2 Continued operation enables the sprinklers to achieve full control of the fire, which, in some cases, can take 20 minutes or more.

A-3-1.1 These systems can be designed for automatic or manual operation. Others are thermostatically operated, open-head systems. Some are specially designed sprinkler heads on pipes extending from a wet- or dry-pipe sprinkler system inside the building and placed to protect window openings.

A-3-4.1 The purpose of exterior sprinkler systems is to prevent the extension of fires to exposed properties.

A-4-1.3 The procedure for fire department pre-incident planning for properties protected by standpipe systems is in many ways similar to that for automatic sprinkler systems.

A-4-2.1 Manual wet-pipe systems supplied only by fire department connections are also used.

A-4-3.1 Many buildings could have sprinkler systems, standpipe systems, or a combination of these systems.

A-4-3.4 Fire department standpipe outlets are required by NFPA 14, *Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems*, to be located in the stair towers, adjacent to the horizontal exits, and near entrances to exit access corridors. However, in some cases, the standpipe might be located on the exterior of the building, frequently adjacent to outside stairs or fire escapes. Accepted practice in standpipe operations is to connect the fire department hose to an outlet located at least one floor below the fire and to advance the line up the flight of stairs. The purpose of this practice is to prevent an intense fire on the fire floor from driving fire fighters away from the standpipe connection. Where additional lines are needed, connections can be made to lower outlets.

A-5-1 An impairment is generally defined as a shutdown of a system or portion thereof. There are two types of impairments — emergency or planned. An emergency impairment results from an unexpected occurrence. A planned impairment is scheduled for the purposes of repair or revisions.

Appendix B Referenced Publication

B-1 The following document or portions thereof is referenced within this recommended practice for informational purposes only and is thus not considered part of its recommendations. The edition indicated here for each reference is the current edition as of the date of the NFPA issuance of this recommended practice.

B-1.1 NFPA Publication. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 14, *Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems*, 2000 edition.