

# NFPA 1141

## Standard for Fire Protection in Planned Building Groups

2003 Edition



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An International Codes and Standards Organization

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## **NFPA 1141**

### **Standard for**

## **Fire Protection in Planned Building Groups**

### **2003 Edition**

This edition of NFPA 1141, *Standard for Fire Protection in Planned Building Groups*, was prepared by the Technical Committee on Forest and Rural Fire Protection and acted on by NFPA at its May Association Technical Meeting held May 18–21, 2003, in Dallas, TX. It was issued by the Standards Council on July 18, 2003, with an effective date of August 7, 2003, and supersedes all previous editions.

This edition of NFPA 1141 was approved as an American National Standard on July 18, 2003.

### **Origin and Development of NFPA 1141**

Work on this standard was begun in 1972 by the former Technical Committee on Suburban and Rural Fire Prevention and Promotion in response to needs expressed by several members. However, due to some technical issues and a reorganization of the committee, the first edition was not issued until 1985. That edition was revised in 1990.

In preparing the 1998 edition, the Committee resolved several issues in clarity and consistency by bringing the document in concert with NFPA 1 and NFPA 101<sup>®</sup>, but specific circumstances listed in the scope and purpose of the document continued to require that some elements remain more restrictive than comparable elements referenced in other NFPA documents.

In the 2003 edition, the Technical Committee has recognized the rapid development of structures into areas that present unusual characteristics to responding fire agencies and has worked extensively on making NFPA 1141 current with other documents and more usable by adopting jurisdictions. The Committee is particularly interested in keeping the flexibility in the application of the standard by jurisdictions so that it works with existing codes and standards that may or may not adequately cover planned building groups.

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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 fire protection for rural, suburban, forest, grass, brush, and tundra areas. This Committee shall also have primary responsibility for documents on Class A foam and its utilization for all wildland and structural fire fighting. This excludes fixed fire protection systems.

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## NFPA 1141

## Standard for

## Fire Protection in Planned Building Groups

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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 Annex A.

Information on referenced publications can be found in Chapter 2 and Annex B.

## Chapter 1 Administration

## 1.1 Scope.

**1.1.1** This standard applies to planned building groups in suburban and rural areas that the authority having jurisdiction (AHJ) determines would be impacted by one or more of the following during a fire: limited water supply, limited fire department resources, extended fire department response time, delayed alarms, limited access, hazardous vegetation, unusual terrain, or unusual characteristics.

**1.1.2\*** This standard applies to new planned building groups. If the authority having jurisdiction determines that additions to existing structures or new structures negatively impact the fire hazard of the overall building group, the necessary requirements of this standard shall be imposed. This standard does not apply to farms or to mobile home or recreational vehicle parks.

## 1.2 Purpose.

**1.2.1\*** The purpose of this standard is to reduce the impact of a fire in a planned building group in suburban and rural areas where there might be limited water supply, limited fire department resources, extended fire department response time, delayed alarms, limited access, hazardous vegetation, unusual terrain, or unusual characteristics.

**1.2.2** This standard shall not be construed as prohibiting better construction or planning features that will materially improve fire protection.

**1.2.3** It is anticipated that the authority having jurisdiction shall use recognized fire protection measures to meet local conditions since this standard does not set forth general fire protection features or procedures addressed in other codes or standards.

**1.2.4** When unusual local conditions exist, the authority having jurisdiction shall determine equivalent requirements that provide a level of protection no less than would be afforded by full compliance with this standard.

**1.2.5** Where a provision of any other standard, code, law, or regulation recognized by the authority having jurisdiction is in conflict with this standard, the more restrictive provision shall apply.

## Chapter 2 Referenced Publications

**2.1 General.** The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

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

NFPA 10, *Standard for Portable Fire Extinguishers*, 2002 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2002 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2002 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, 2002 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2003 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, 2002 edition.

NFPA 30, *Flammable and Combustible Liquids Code*, 2003 edition.

NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, 2003 edition.

NFPA 54, *National Fuel Gas Code*, 2002 edition.

NFPA 58, *Liquefied Petroleum Gas Code*, 2001 edition.

NFPA 72®, *National Fire Alarm Code*®, 2002 edition.

NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2001 edition.

NFPA 1144, *Standard for Protection of Life and Property from Wildfire*, 2002 edition.

## 2.3 Other Publications.

**2.3.1** *Webster's Third New International Dictionary, Unabridged*, January 2002.

## Chapter 3 Definitions

**3.1 General.** The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not included, common usage of the terms shall apply. Common usage of words and terms shall be as set forth in *Webster's Third New International Dictionary, Unabridged*.

## 3.2 NFPA Official Definitions.

**3.2.1\* Approved.** Acceptable to the authority having jurisdiction.

**3.2.2\* Authority Having Jurisdiction (AHJ).** An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

**3.2.3 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.

**3.2.4\* 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.

**3.2.5 Shall.** Indicates a mandatory requirement.

**3.2.6 Should.** Indicates a recommendation or that which is advised but not required.

### 3.3 General Definitions.

**3.3.1 Accessory Structure.** Any structure used incidentally to another structure.

**3.3.2 Adjacent Ground Elevation.** The reference plane representing the average elevation of the finished ground level measured at a distance of 3 m (10 ft) from all exterior walls of the building.

**3.3.3 Alternative.** A system, condition, arrangement, material, or equipment submitted for approval to the authority having jurisdiction and the fire chief as a substitute for a code requirement.

**3.3.4 Automatic Fire Extinguishing System.** Any system that is designed and installed to detect a fire and subsequently discharge an extinguishing agent without human activation or direction.

**3.3.5 Basement.** A story with more than 50 percent of its cubic volume below the average adjacent ground level.

**3.3.6 Building.** Any structure used or intended for supporting any occupancy.

**3.3.7 Combustible.** Any material that, in the form in which it is used and under the conditions anticipated, will ignite and burn or will add appreciable heat to an ambient fire.

**3.3.8 Curb Cut.** Reduced curb height to facilitate vehicle passage over or across a curb. Curb cut can be an abrupt reduction or a tapering reduction for the length of the curb on each side of the means of access.

**3.3.9 Dry Hydrant.** A permanent piping system, normally a drafting source, that provides access to a water source other than a municipal-type water system.

**3.3.10 Dwelling.** A single unit providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

**3.3.11 Existing Condition.** Any situation, circumstance, or physical makeup of any structure, premise, or process that was ongoing or in effect prior to the adoption of this standard.

**3.3.12 Farms.** Those properties that are used primarily for agricultural purposes.

**3.3.13 Fire Department.** The governmental or other organization that is responsible for providing fire protection services to an area.

**3.3.14 Fire Flow.** The flow rate of a water supply, measured at 138 kPa (20 psi) residual pressure, that is available for fire fighting.

**3.3.15 Fire Hazard.** Any situation, process, material, or condition that, on the basis of applicable data, can cause a fire or an explosion or provide a ready fuel supply to augment the spread or intensity of the fire or explosion and that poses a threat to life or the property of others.

**3.3.16 Fire Hydrant.** A valved connection on a water supply system having one or more outlets and that is used to supply hose and fire department pumpers with water.

**3.3.17 Fire Lane.** A means of access or other passageway designated and identified to provide access for emergency apparatus where parking is not allowed.

**3.3.18 Fire Protection.** All measures taken to reduce the burden of fire on the quality of life. Fire protection includes measures such as fire prevention, fire suppression, built-in fire protection systems, and planning and building codes.

**3.3.19 Fire Protection System.** Any fire alarm device or system or fire extinguishing device or system, or their combination, that is designed and installed for detecting, controlling, or extinguishing a fire or otherwise alerting occupants, or the fire department, or both, that a fire has occurred.

**3.3.20 Fire-Resistant.** Construction designed to offer reasonable protection against fire.

**3.3.21 Fuels.** All combustible material within the wildland/urban interface or intermix, including, but not limited to, vegetation and structures.

**3.3.22 Gross Floor Area.** The area of a building under the roof, multiplied by the number of floors, including the basement.

**3.3.23 Height.** As applied to a building, the vertical distance from the adjacent ground elevation to the average elevation of the roof of the highest story.

**3.3.24 Jurisdiction.** Any governmental unit or political division or subdivision including, but not limited to, township, village, borough, parish, city, county, state, commonwealth, province, freehold, district, or territory over which the governmental unit exercises power and authority.

**3.3.25 Means of Access.** The method by which entry or approach is made by emergency apparatus to structures — for example, roadways, fire lanes, and parking lots.

**3.3.26 Municipal-Type Water System.** A system having water pipes servicing hydrants and designed to furnish, over and above domestic consumption, a minimum of 950 L/min (250 gpm) at 138 kPa (20 psi) residual pressure for a 2-hour duration.

**3.3.27 Noncombustible.** Any material that, in the form in which it is used and under the conditions anticipated, will not ignite and burn nor will add appreciable heat to an ambient fire.

**3.3.28 Occupancy.** The purpose for which a building, or part thereof, is used or intended to be used.

**3.3.29 Planned Building Groups.** Multiple structures constructed on a parcel of land, excluding farmland, under the ownership, control, or development by an individual, a corporation, a partnership, or a firm.

**3.3.30 Private Street.** Any accessway normally intended for vehicular use not dedicated as a public street.

**3.3.31 Public Street.** A thoroughfare that has been dedicated for vehicular use by the public.



**3.3.32 Risk.** The chance of a fire starting from any cause.

**3.3.33 Roadway.** Any public or private street, including bridges.

**3.3.34 Slope.** Upward or downward incline or slant, usually calculated as a percentage.

**3.3.35\* Standpipe.** A pipe and attendant hose valves and hose (if provided) used for conveying water to various parts of a building for fire-fighting purposes.

**3.3.36 Story.** That portion of a building between the upper surface of the floor and the upper surface of the next floor above.

**3.3.37 Structure.** That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

**3.3.38 Water Supply.** A source of water for fire-fighting activities.

**3.3.39 Wildland Fire.** An unplanned and uncontrolled fire spreading through vegetative fuels, at times involving structures.

**3.3.40 Wildland/Urban Interface.** An area where improved property and wildland fuels meet at a well-defined boundary.

**3.3.41 Wildland/Urban Intermix.** An area where improved property and wildland fuels meet with no clearly defined boundary.

## Chapter 4 Plans

**4.1\* Plans.** As a minimum, the authority having jurisdiction shall require anyone proposing to develop a planned building group to submit preliminary, working, and as-built plans.

### 4.1.1\* Preliminary Plans.

**4.1.1.1** All preliminary plans, when submitted, shall contain, as a minimum, a site plan showing proposed water supply, roadway access, fire department access, and other items pertinent to the specific project.

**4.1.1.2** The authority having jurisdiction shall make recommendations to the submitter based on the preliminary plans to assist in developing the working plans, which shall then be submitted to the authority having jurisdiction for approval.

**4.1.2 Working Plans.** Working plans, drawn to scale and signed by a licensed architect or engineer, shall be accurate and shall illustrate the final design of items required by this standard.

**4.1.3 As-Built Plans.** Drawings showing items listed in 4.1.1.1, building floor plans, and fire protection systems, as built, shall be submitted to the fire department upon completion of the project.

## Chapter 5 Means of Access

**5.1 General.** This section shall apply to roads constructed within the confines of private property whether or not they are dedicated as public thoroughfares.

**5.1.1** Means of access for fire department apparatus shall consist of roadways, fire lanes, parking lot lanes, or a combination thereof, and shall be provided to all structures.

**5.1.2** Access to the property of the planned building group shall be provided by a minimum of two distinctly separate routes, each located as remotely from the other as possible.

**5.1.3\*** Landscaping or other obstructions shall be maintained in a manner that provides unobstructed access for fire department operations.

**5.2 Roadways.** Roadways shall be constructed and maintained in accordance with Section 5.2.

**5.2.1** Roadways shall be constructed of a hard, all-weather surface designed to support the heaviest piece of fire apparatus likely to be operated on the roadway.

**5.2.2** Every dead-end roadway more than 91.5 m (300 ft) in length shall be provided at the closed end with a turnaround having not less than a 36.5 m (120 ft) outside diameter of traveled way.

**5.2.3\*** Roadways shall have a minimum clear width of 3.7 m (12 ft) for each lane of travel, excluding shoulders and parking. Provisions shall be made for factors that could impinge on the minimum width — for example, drainage, snow removal, parking, and utilities.

**5.2.4** Grades shall be not more than 10 percent except as permitted by 5.2.4.1.

**5.2.4.1** Grades steeper than 10 percent shall be permitted by the authority having jurisdiction where mitigation measures can be agreed upon jointly by the fire department and the road engineering department.

**5.2.5** Grades shall be not less than 0.5 percent in order to prevent pooling of water in a traveled way.

**5.2.6** Any secondary road intersecting with another road shall be sloped 1 percent to 3 percent down and away from the intersection for a distance of 30.5 m (100 ft) from the intersection.

**5.2.7\*** At least 4.1 m (13 ft 6 in.) nominal vertical clearance shall be provided and maintained over the full width of all means of access.

**5.2.8** Turns in roadways shall maintain the minimum road width.

**5.2.9\*** Turns in publicly owned or privately owned major feed roadways shall be constructed with a minimum radius of 30.5 m (100 ft) to the centerline.

### 5.3 Parking Lots.

**5.3.1** The minimum lengths of parking lot stalls as measured end to end and the minimum aisle widths shall be as shown in Table 5.3.1.

**5.3.2** Parking lot lanes adjacent to any building shall provide a travel lane with 4.9 m (16 ft) clear width if traffic flow is one way and 7.3 m (24 ft) clear width if traffic flow is two way.

**5.3.3** The minimum turning radius for parking lot lanes necessary for fire department apparatus access shall be determined by the authority having jurisdiction.

### 5.4\* Fire Lanes.

**5.4.1** Fire lanes shall be provided as required by the fire department having jurisdiction and in keeping with the requirements of Section 5.4.

**Table 5.3.1 Minimum Parking Lot Stall Dimensions and Minimum Aisle Lengths**

Parking Angle	Minimum Stall Length		Minimum Aisle Width, One-Way Traffic Flow		Minimum Aisle Width, Two-Way Traffic Flow	
	m	ft	m	ft	m	ft
45 degrees	8.4	27.5	4.9	16	7.3	24
60 degrees	7.2	23.7	4.9	16	7.3	24
75 degrees	6.4	20.9	7.0	23	7.3	24
90 degrees	5.6	18.5	7.9	26	7.9	26

**5.4.2** Fire lanes providing one-way travel shall be a minimum of 4.9 m (16 ft) in width, and fire lanes with two-way travel shall be a minimum of 7.3 m (24 ft) in width.

**5.4.3** Turns in fire lanes shall be constructed with a minimum radius of 7.6 m (25 ft) at the inside curb line and a minimum radius of 15.2 m (50 ft) at the outside curb line.

**5.4.4** Fire lanes connecting to roadways shall be provided with curb cuts extending at least 0.6 m (2 ft) beyond each edge of the fire lane.

**5.4.5** The angle of approach and departure for any means of access shall not exceed 8 degrees.

**5.4.6** The designation, design, and maintenance of fire lanes on private property shall be approved by the authority having jurisdiction.

**5.4.7** The clear opening provided through gates shall be 0.6 m (2 ft) wider than the traveled way.

**5.4.8** All gates shall be located a minimum of 9.1 m (30 ft) from the public right-of-way and shall not open outward.

**5.4.9** Fire department personnel shall have ready access to locking mechanisms on any gate restricting access to a fire lane. Proposed changes to access shall be preapproved by the authority having jurisdiction.

**5.4.10\*** Appropriate “No Parking” signs shall be posted in accordance with the instructions of the fire department having jurisdiction, and a method of enforcing such provisions shall be provided.

**5.4.11** At least 4.1 m (13 ft 6 in.) nominal vertical clearance shall be provided and maintained over the full width of a fire lane.

## Chapter 6 Structures

### 6.1 Access to Structures.

**6.1.1 General.** At least one approved means of vehicular access shall be provided to each structure or other nonstructural fire hazard in accordance with the following:

- (1)\*For structures or nonstructural fire hazards exceeding two stories or 9.1 m (30 ft) in height above average adjacent ground level, or 1115 m<sup>2</sup> (12,000 ft<sup>2</sup>) gross floor area, no less than two separate approved means of access shall be provided.

- (2) Approved vehicular access shall be provided to within 45.7 m (150 ft) of any point of the exterior wall of each structure.

**6.1.2 Structures Not Protected by Automatic Sprinklers.** For any structure, other than one- and two-family dwellings, exceeding two stories or 9.1 m (30 ft) in height above average adjacent ground elevation, approved means of vehicular access shall be provided to within 9.1 m (30 ft) of all points of at least two exterior walls.

### 6.1.3 Structures Protected by Automatic Sprinklers.

**6.1.3.1** For any structure protected by an automatic sprinkler system installed and maintained according to NFPA 13, *Standard for the Installation of Sprinkler Systems*, or NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, whichever is applicable, approved means of vehicular access shall be provided to within 122 m (400 ft) of any point of the exterior wall.

**6.1.3.2** For any structure exceeding three stories or 10.7 m (35 ft) in height above average adjacent ground elevation and protected by an automatic sprinkler system installed and maintained according to NFPA 13, *Standard for the Installation of Sprinkler Systems*, NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, whichever is applicable, approved means of vehicular access shall be provided to within 9.1 m (30 ft) of all points of at least two exterior walls.

### 6.2 Structure Separation.

**6.2.1** Any structure of a planned building group shall be separated from another structure by at least 9.1 m (30 ft) and shall be set back at least 9.1 m (30 ft) from a property line.

**6.2.2** Any structure of a planned building group that exceeds two stories or 9.1 m (30 ft) in height above average adjacent ground elevation and is not protected by an automatic sprinkler system installed and maintained according to NFPA 13, *Standard for the Installation of Sprinkler Systems*, NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, shall be separated from any other structure by at least 15.2 m (50 ft) and shall be set back at least 9.1 m (30 ft) from a property line.

### 6.3 Structural Requirements.

**6.3.1 General.** In jurisdictions not governed by fire codes, NFPA fire codes or standards, as they apply for the intended occupancy of the structure, shall be the minimum requirements.

### 6.3.2 Fire Separation.

**6.3.2.1 Common Walls and Ceilings.** Common walls and ceilings between any two units, whether residential or nonresidential, shall be constructed to provide a fire resistance rating of not less than 1 hour.

**6.3.2.2 Vehicle Storage.** Vehicle storage areas shall be separated from living areas by walls and ceilings constructed to provide a fire resistance rating of not less than 1 hour except as permitted by 6.3.2.2.1 and 6.3.2.2.2.

**6.3.2.2.1** The walls separating a vehicle storage area from a living area in a single-family dwelling shall be permitted to be covered with a minimum of 16 mm ( $\frac{5}{8}$  in.) Type X gypsum board or equivalent on the vehicle storage side and 12.7 mm ( $\frac{1}{2}$  in.) gypsum board on the living unit side.

**6.3.2.2.2** Doors between a vehicle storage area and a living area in a single-family dwelling shall be permitted to be 35 mm ( $1\frac{3}{8}$  in.) solid-core doors with self-closers.

## Chapter 7 Structures Adjacent to Wildland Fuels

### 7.1\* General.

**7.1.1\*** In areas not governed by fire codes that address wildland/urban intermix or interface issues, NFPA fire codes or standards, as they apply for the intended occupancy of the structure, shall be the minimum requirement applied to structures potentially threatened by wildland fire.

**7.1.2\*** After construction, continued maintenance of the grounds and storage of combustible materials shall be performed to maintain these requirements, as acceptable to the authority having jurisdiction.

**7.1.3** A wildland fire risk hazard severity assessment shall be performed for all structures and groups of structures adjacent to wildland fuels.

**7.2 Location.** Buildings located closer than 9.1 m (30 ft) to a vegetated slope shall require special mitigation measures in accordance with NFPA 1144, *Standard for Protection of Life and Property from Wildfire*.

### 7.3 Roof Design and Materials.

**7.3.1\*** Only roof covering assemblies rated Class A or B shall be used. The specific class shall be consistent with the wildland fire risk and hazard severity assessment as determined by the authority having jurisdiction.

**7.3.2** Roof assembly ventilation shall be screened with a corrosion-resistant, noncombustible wire mesh, with the mesh opening not to exceed nominal 6.4 mm ( $\frac{1}{4}$  in.) in size.

**7.3.3** Eaves shall be boxed in with 15.8 mm ( $\frac{5}{8}$  in.) nominal sheathing or noncombustible materials.

**7.4 Overhanging Projections.** Porches, decks, balconies, and similar overhanging projections shall be constructed of a 1-hour fire resistive-rated assembly or type heavy timber construction, as defined by local building standards, or of noncombustible materials.

**7.5 Overhanging Buildings.** The underside of overhanging buildings shall be constructed of a 2-hour fire resistive-rated assembly or type heavy timber construction, as defined by local building standards, or of noncombustible materials.

**7.6 Exterior Vertical Walls.** Exterior vertical walls potentially exposed to a wildland fire shall be constructed of a 20-minute fire resistive-rated assembly or type heavy timber construction, as defined by local building standards, unless a wildland fire risk and hazard severity assessment requires greater protection.

### 7.7 Exterior Openings.

**7.7.1** Exterior windows and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multi-

layered glazed panels, or glass block or have a fire resistance rating of no less than 20 minutes.

**7.7.2** Exterior doors shall be approved noncombustible construction, minimum 35 mm ( $1\frac{3}{8}$  in.) thick, solid-core wood, or have a fire protection rating of no less than 20 minutes.

### 7.8 Chimneys and Flues.

**7.8.1 Outlet Screen.** Every fireplace and wood stove chimney and flue shall be provided with an approved spark arrester constructed of a minimum 12 gauge welded wire or woven wire mesh, with openings not to exceed 12.7 mm ( $\frac{1}{2}$  in.).

**7.8.2 Clearance.** Vegetation shall not be allowed within 3 m (10 ft) of a chimney outlet.

**7.9 Outbuildings and Accessory Structures.** Outbuildings, patio covers, gazebos, and other accessory structures shall be constructed to meet the requirements of this chapter or be separated from the main structure by a minimum of 9.1 m (30 ft).

## Chapter 8 Fire Protection

### 8.1 Automatic Fire Protection.

**8.1.1** All structures more than three stories or over 12.2 m (40 ft) in height above adjacent ground elevation shall be fully protected with an automatic sprinkler system installed and maintained according to NFPA 13, *Standard for the Installation of Sprinkler Systems*, NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*.

**8.1.2** Any residential building containing more than two residential living units shall have an automatic sprinkler system installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, or NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, whichever is appropriate.

**8.1.3\*** If mounted on the building they serve, fire department connections for sprinkler systems shall be located not less than 30.5 m (100 ft) nor more than 61 m (200 ft) from a fire hydrant.

**8.1.4** If not mounted on the building they serve, fire department connections for sprinkler systems shall be at least 30.5 m (100 ft) from the building and not more than 15.2 m (50 ft) nor less than 7.6 m (25 ft) from a hydrant.

### 8.2 Manual Fire Protection.

**8.2.1** The requirements of 8.2.1.1 through 8.2.1.3 shall apply to all new buildings more than three stories in height or over 15.2 m (50 ft) in height above adjacent ground elevation that contain intermediate stories or balconies, except industrial process structures where the life or property of others would not be imperiled by a fire or explosion.

**8.2.1.1\*** The building shall be equipped with a standpipe system installed in accordance with the provisions of this section and NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

**8.2.1.2** If mounted on the building they serve, fire department connections for standpipe systems shall be located not less than 30.5 m (100 ft) nor more than 61 m (200 ft) from a fire hydrant.

**8.2.1.3** If not mounted on the building they serve, fire department connections shall be at least 30.5 m (100 ft) from the building and not more than 15.2 m (50 ft) nor less than 7.6 m (25 ft) from a hydrant.

**8.2.2\*** Any residential buildings shall have a portable fire extinguisher, near an exit and having a minimum rating of 2-A:10-B:C, provided in each dwelling unit and installed in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*.

### **8.3 Automatic Fire Warning Systems.**

**8.3.1** Any residential buildings containing more than two living units shall have a local fire alarm system designed and installed in accordance with NFPA 72, *National Fire Alarm Code*.

**8.3.2** In any residential buildings containing four or more living units, the local fire alarm system shall retransmit to an approved central station.

**8.3.3** For nonresidential structures exceeding 93 m<sup>2</sup> (1000 ft<sup>2</sup>) gross floor area, an approved fire warning or alarm system shall be installed in accordance with NFPA 72, *National Fire Alarm Code*.

**8.3.3.1** Such systems shall retransmit an alarm.

**8.3.3.2** Alarms or warning systems shall be tested and maintained in accordance with NFPA 72, *National Fire Alarm Code* or as required by the authority having jurisdiction.

## **Chapter 9 Water Supply**

### **9.1 General.**

**9.1.1** Water supply systems used for fire protection purposes shall be installed and maintained in accordance with NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, or NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*.

**9.1.2\*** The required fire flow for one or more buildings of a planned building group shall be determined by the authority having jurisdiction using locally adopted codes, or as specified per the following conditions:

- (1) For areas without municipal-type water systems, NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, shall be applied.
- (2) For those areas with municipal-type water systems, nationally recognized criteria shall be applied.

**9.1.3** Fire hydrants shall be marked in a uniform manner and shall be made visible from the road by reflective marking and signage as designated by the authority having jurisdiction.

**9.1.4** All identification signs for fire hydrants shall be approved by the applicable authority prior to installation if they are to be located in the right-of-way or subject to other laws.

**9.1.5** Fire hydrants located in parking areas shall be protected by barriers that will prevent physical damage from vehicles without obstructing hydrant operation.

**9.1.6** Fire hydrants shall be located within 1.8 m (6 ft) of the edge of the pavement unless the fire department determines another location is more acceptable for fire department use.

**9.1.7\*** Threads on fire hydrant outlets shall be American National Fire Hose Connection Screw Threads and shall be equipped with thread adapters where local fire department thread is different.

**9.1.8\*** Water sources shall be located such that the highest required fire flow, but in no case less than 950 L/min (250 gpm), can be established and maintained within a time period approved by the authority having jurisdiction.

### **9.2 Areas with Municipal-Type Water Systems.**

**9.2.1** For a required fire flow exceeding 5700 L/min (1500 gpm), the water supply system shall be capable of delivering that fire flow for at least 2 hours at 138 kPa (20 psi).

**9.2.2** For all required fire flows other than those described in 9.2.1, the water supply system shall be capable of delivering the required fire flow for at least 1 hour at 138 kPa (20 psi).

**9.2.3** Fire hydrants shall be installed at a spacing not to exceed 200 m (660 ft) of vehicle travel distance.

**9.2.4** Where the proposed buildings warrant, the fire department shall require additional hydrants and closer spacing.

**9.2.5** The fire department shall approve the required fire flow and designate the location of hydrants so that at least one hydrant will be within 100 m (330 ft) of any point of entry into the building.

**9.2.6** Fire hydrants shall be supplied by not less than a 150 mm (6 in.) diameter main installed on a looped system or by not less than a 200 mm (8 in.) diameter main if the system is not looped or the fire hydrant is installed on a dead-end main exceeding 91.5 m (300 ft) in length.

**9.2.7** Dead-end mains shall not exceed 183 m (600 ft) in length for main sizes less than 250 mm (10 in.) in diameter.

### **9.3 Acceptance.**

**9.3.1** The contractor or installer of water supply systems in planned building groups shall demonstrate by actual test that the capacity of the water supply system will meet fire protection design requirements.

**9.3.2** Such acceptance tests shall be certified by the fire department and other authority having jurisdiction.

## **Chapter 10 Protection During Construction**

### **10.1 General Requirements.**

**10.1.1\* Minimum Fire Protection.** Protection shall not be less than that required by the fire department having jurisdiction.

**10.1.2 Vehicular Access.** Fire department vehicular access to all structures under construction shall be provided at all times.

**10.1.2.1** In areas where ground surfaces are soft or likely to become soft, hard all-weather surface access roads shall be provided.

**10.1.3 Trash and Debris.** Trash and debris shall be removed from the construction site as often as necessary to maintain the site in a fire-safe manner.



**10.1.4 Flammable or Combustible Liquids.** Flammable or combustible liquids shall be stored, handled, or used on the construction site in accordance with the applicable provisions of NFPA 30, *Flammable and Combustible Liquids Code*; NFPA 54, *National Fuel Gas Code*; and NFPA 58, *Liquefied Petroleum Gas Code*.

**10.1.5 Portable Fire Extinguishers.** One portable fire extinguisher having a minimum rating of 4-A:30-B:C shall be within a travel distance of 22.9 m (75 ft) or less to any point of a structure under construction.

**10.1.5.1** Personnel normally on the construction site shall be instructed in the use of the fire extinguishers provided.

**10.1.6 Heating Devices.** Temporary heating devices shall be of an approved type, located away from combustible materials, and attended and maintained by competent personnel.

**10.1.7 Smoking.** Smoking shall be prohibited, except in those areas approved. When required by the authority having jurisdiction, "No Smoking" signs shall be posted.

**10.1.8 Cutting and Welding.** Cutting and welding operations shall be in accordance with NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*.

**10.2 During Construction Phase.** Prior to the delivery of combustible materials and construction of buildings, the water supply for fire protection, either temporary or permanent and acceptable to the fire department, shall be made available.

## Annex A Explanatory Material

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

**A.1.1.2** For requirements on mobile home parks, see NFPA 501A, *Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities*. For requirements on recreational vehicle parks, see NFPA 1192, *Standard on Recreational Vehicles*, and NFPA 1194, *Standard for Recreational Vehicle Parks and Campgrounds*.

**A.1.2.1** The requirements of this standard can be used for developments having distinguishing features similar to planned building groups, including but not limited to subdivisions and recreation camps.

**A.3.2.1 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.3.2.2 Authority Having Jurisdiction (AHJ).** The phrase "authority having jurisdiction," or its acronym AHJ, 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.3.2.4 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.3.3.35 Standpipe.** See NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

**A.4.1** Additional plans, such as fuel hazard abatement, might be required to address hazards specific to the area or project.

**A.4.1.1** Reviewing plans and finding cooperative solutions to problems during the planning stage tend to eliminate many major difficulties, misunderstandings, and economic waste.

**A.5.1.3** These obstructions include those obscuring or interfering with fire department connections to sprinkler and standpipe systems and ladder access to upper floors or roof structures.

**A.5.2.3** Road widths should be sufficient for travel and the passage of other vehicles and should allow for safety when fire personnel are operating from parked vehicles in the vicinity of the fire scene.

**A.5.2.7** Vertical clearances of less than 4.1 m (13 ft 6 in.) can prohibit or severely slow the response of certain types or makes of fire apparatus.

**A.5.2.9** Turns in roads of this width should be designed and constructed as indicated to prevent fire apparatus from having to ride up on the curb. Turns with a radius less than mandated here can prohibit or seriously impede apparatus response.

**A.5.4** A fire lane can be a subsurface construction of hard material that is adequately designed to support the heaviest piece of fire apparatus likely to be driven on it and then covered with no more than 7.62 cm (3 in.) of soil, sod, or both or to the specifications of an engineered subsurface system. When a subsurface fire lane is constructed, it should be identified in a manner acceptable to the fire department.

**A.5.4.10** The local law enforcement officers should be given written legal authority to enforce parking regulations, or property management should be prepared to enforce these regulations with their own personnel, including the towing of vehicles as necessary.

**A.6.1.1(1)** For tall buildings, it might be necessary to position apparatus on two or more sides of the building for effective fire-fighting and rescue operations. Ground ladders can be used effectively on short buildings. Tall buildings normally require the use of aerial ladders. Preferably, access should be provided at the front and rear of the structure.

**A.7.1** See NFPA 1144, *Standard for Protection of Life and Property from Wildfire*, Section A.4.2, Wildfire Hazard Severity and Fire Risk Assessment Form.

**A.7.1.1** See NFPA 1144, *Standard for Protection of Life and Property from Wildfire*.

**A.7.1.2** NFPA 1144, *Standard for Protection of Life and Property from Wildfire*, addresses the following issues related to structures adjacent to wildland fuels:

- (1) Location of the structure on the lot
- (2) Vegetation within 91 m (300 ft) of the structure
- (3) Construction elements and arrangements
- (4) Subdivision design (roadways, water supplies, and so on)

**A.7.3.1** Fire-retardant roof covering assemblies are Class A or B. (See NFPA 203, *Guide on Roof Coverings and Roof Deck Constructions*, for definitions.) The specific class should be consistent with the fire threat as determined by the authority having jurisdiction.

**A.8.1.3** The authority having jurisdiction should consider the hydrant-to-building proximity in determining the location of the fire department connection pursuant to enforcement of this section. Hydrants should not be located closer than 15.2 m (50 ft) to the building being protected by the sprinkler system. This can be accomplished by locating the fire department connection away from the building.

**A.8.2.1.1** The authority having jurisdiction should consider the hydrant-to-building proximity in determining the location of the fire department connection pursuant to enforcement of this section. Hydrants should not be located closer than 15.2 m (50 ft) to the building being protected by a standpipe system. This can be accomplished by locating the fire department connection away from the building.

**A.8.2.2** This requirement can be met by providing one multipurpose dry chemical fire extinguisher or one Class A and one Class B:C fire extinguisher. The reasoning behind the requirement to locate these extinguishers in the dwelling unit is to prevent theft.

**A.9.1.2** Some of the permissible national criteria include *Fire Suppression Rating Schedule* or *Guide for Determination of Needed Fire Flow* from the Insurance Services Office (ISO).

**A.9.1.7** See NFPA 1963, *Standard for Fire Hose Connections*.

**A.9.1.8** For additional information, refer to NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, or NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, depending on the fire department (protection agency) involved.

**A.10.1.1** For additional fire protection considerations during construction, refer to NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.

## Annex B Informational References

**B.1 Referenced Publications.** The following documents or portions thereof are referenced within this standard for informational purposes only and are thus not part of the requirements of this document unless also listed in Chapter 2.

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

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2003 edition.

NFPA 203, *Guide on Roof Coverings and Roof Deck Constructions*, 2000 edition.

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, 2000 edition.

NFPA 501A, *Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities*, 2003 edition.

NFPA 1144, *Standard for Protection of Life and Property from Wildfire*, 2002 edition.

NFPA 1192, *Standard on Recreational Vehicles*, 2002 edition.

NFPA 1194, *Standard for Recreational Vehicle Parks and Campgrounds*, 2002 edition.

NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.

NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, 2001 edition.

NFPA 1963, *Standard for Fire Hose Connections*, 2003 edition.

### B.1.2 Other Publications.

**B.1.2.1 ISO Publications.** Insurance Services Office, 55 Washington Blvd., Jersey City, NJ 07310.

*Fire Suppression Rating Schedule*, 2003.

*Guide for Determination of Needed Fire Flow*, 2001.

**B.2 Informational References.** The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

**B.2.1 NFPA Publications.** National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 1, *Uniform Fire Code*<sup>TM</sup>, 2003 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, 2003 edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection*, 2003 edition.

NFPA 31, *Standard for the Installation of Oil-Burning Equipment*, 2001 edition.

NFPA 70, *National Electrical Code*<sup>®</sup>, 2002 edition.

NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, 2001 edition.

NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment*, 1999 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2002 edition.

NFPA 90B, *Standard for the Installation of Warm Air Heating and Air-Conditioning Systems*, 2002 edition.

NFPA 101<sup>®</sup>, *Life Safety Code*<sup>®</sup>, 2003 edition.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*, 2003 edition.

NFPA 220, *Standard on Types of Building Construction*, 1999 edition.

NFPA 600, *Standard on Industrial Fire Brigades*, 2000 edition.

NFPA 601, *Standard for Security Services in Fire Loss Prevention*, 2000 edition.

NFPA 780, *Standard for the Installation of Lightning Protection Systems*, 2000 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2002 edition.

Brannigan, Francis L., *Building Construction for the Fire Service*, 1992.

*Fire Protection Handbook*, 19th edition, 2003.

Kimball, Warren Y., *Fire Attack I*, 1966.

Kimball, Warren Y., *Fire Attack II*, 1966.

*NFPA Fire and Life Safety Inspection Manual*, 8th edition, 2002.

#### **B.2.2 Other Information Sources.**

American Institute of Architects Research Corporation, 1735 New York Avenue, Washington, DC 20006.

American Insurance Service Group, 85 John Street, New York, NY 10038.

American Water Works Association, 6666 W. Quincy Avenue, Denver, CO 80235.

Building Officials and Code Administrators International, 4051 W. Flossmoor Road, Country Club Hills, IL 60478-5795.

Insurance Services Office, 55 Washington Boulevard, Jersey City, NJ 07310.

International City/County Managers' Association, 777 N. Capitol Street, Washington, DC 20002.

International Conference of Building Officials, 5360 S. Workman Mill Road, Whittier, CA 90601.

International Fire Marshals Association, c/o NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

Southern Building Code Congress International, 900 Montclair Road, South Birmingham, AL 35213.

#### **B.3 References for Extracts. (Reserved)**

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