

NFPA®

1140

Standard for
Wildland Fire Protection

2022

Includes

NFPA 1051 | NFPA 1141 | NFPA 1143 | NFPA 1144



NFPA® 1140

Standard for Wildland Fire Protection

2022 Edition



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NFPA® 1140

Standard for

Wildland Fire Protection

2022 Edition

This edition of NFPA 1140, *Standard for Wildland Fire Protection*, was prepared by the Technical Committees on Wildland Fire Management and Wildland and Rural Fire Protection and released by the Correlating Committee on Professional Qualifications. It was issued by the Standards Council on May 24, 2021, with an effective date of June 13, 2021.

This edition of NFPA 1140 was approved as an American National Standard on June 13, 2021.

Origin and Development of NFPA 1140

The 1995 edition of NFPA 1051, *Standard for Wildland Fire-Fighter Professional Qualifications*, was the first edition of the document. Originally, NFPA 1051 focused on the skills and knowledge necessary to perform wildland firefighting. Through the course of many editions, it was expanded to include suppression and pre-suppression activities, officer-related positions, power tools and equipment, and requisite skills and knowledge. Ultimately, this resulted in the 2016 edition of NFPA 1051, *Standard for Wildland Firefighting Personnel Professional Qualifications*.

The 1985 edition of NFPA 1141 was the first edition of the document. Originally, NFPA 1141 was focused on fire protection for planned building groups. Through the course of many editions, it expanded to include community infrastructure; wildland, rural, and suburban areas; and requirements for land use. Ultimately, this resulted in the 2017 edition of NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*.

Originally, the 1934 edition of NFPA 295, *Community Forest Fire Fighting Equipment*, covered the baseline topics most associated with NFPA 1143, *Standard for Wildland Fire Management*. The 2003 edition included a complete rewrite and a new document number and title. The original rewrite of NFPA 1143 for the 2003 edition focused on recognizing the national fire plan and various mitigation efforts to assist ailing forests and endangered communities adjacent to forest areas. Through the course of many editions, NFPA 1143 expanded to include the full cycle of wildland fire management; modernized equipment usage; alignment with NFPA professional qualifications standards; and alignment with the requirements associated with the National Wildfire Coordinating Group, National Incident Management System, public information officers, and safety officers. Ultimately, this resulted in the 2018 edition of NFPA 1143.

Originally, the 1935 edition of NFPA 224, *Fire Protection and Prevention for Summer Homes in Forested Areas*, covered the baseline topics most associated with NFPA 1144, *Standard for Reducing Structure Ignition Hazards from Wildland Fire*. Over the course of multiple editions, the document number transitioned to 1144. The 2002 edition of NFPA 1144 saw significant revision to the wildland fire risk and hazard severity assessment system. Through the course of many editions, NFPA 1144 expanded to include individual structure hazards; combustible, non-combustible, and ignition-resistant material; planning development in threatened areas; Firewise® communities; water-based elements; and structure/roofing materials meeting ASTM testing standards. Ultimately, this resulted in the 2018 edition of NFPA 1144.

The 2022 edition of NFPA 1140, *Standard for Wildland Fire Protection*, marks the first of the consolidation efforts of NFPA's Emergency Response and Responder Safety (ERRS) standards. At the April 2019 NFPA Standards Council Meeting, the Council directed NFPA staff and all NFPA ERRS Committees to consolidate and unify NFPA standards with similar content areas. The goal of this effort is to increase usability, reduce errors and conflicts, and ultimately produce greater quality standards.

The 2022 edition of NFPA 1140 marks the integration of NFPA 1051, 1141, 1143, and 1144 into a single wildland fire safety standard to support this effort. One effect of this integration is that key

terms have been consolidated into single definitions. In addition, the annex on air operations for wildland fire incidents that was previously in NFPA 1143 has been removed, as adequate coverage of the topic would be beyond the scope of the standard, and aircraft safety procedures are already addressed in A.20.4.3 of that standard.

The 2022 edition also includes several important changes. A requirement for continuing professional development has been added for all wildland firefighting positions. Permission to reduce the minimum separation distance between buildings in wildland areas if both buildings are protected with automatic sprinkler systems has been eliminated. A requirement for automatic sprinkler systems for all one- and two-family dwellings and all apartment occupancies has been added. Multi-agency operational plans for community safety and emergency preparedness must now incorporate planning for physical space, including maintenance of the space to ensure its functionality. Finally, the requirements for building construction and design materials have been updated for consistency with current building codes.

For more information about the ERRS consolidation project see nfpa.org/errs.

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NFPA 1140

Standard for

Wildland Fire Protection

2022 Edition

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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.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

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

Chapter 1 Administration

1.1 Scope. This standard provides the minimum requirements for wildland fire management and the associated professional qualifications for wildland fire positions.

1.2 Purpose. The purpose of this standard is to specify the minimum requirements for fire protection and emergency services infrastructure in wildland, rural, and suburban areas; wildland fire management practices and policies; methods of assessing wildland fire ignition hazards; and job performance requirements (JPRs) for wildland fire positions.

1.3* Application. This standard can be applied as follows:

- (1) Chapters 1 through 3; 4 through 9; and Annexes A, B, C, D, E, F, G, H, I, and L constitute the 2022 edition of NFPA 1051.
- (2) Chapters 1 through 3; 10 through 18; and Annexes A and L constitute the 2022 edition of NFPA 1141.
- (3) Chapters 1 through 3; 19 through 23; and Annexes A, J, and L constitute the 2022 edition of NFPA 1143.
- (4) Chapters 1 through 3; 24 through 26; and Annexes A, J, K, and L constitute the 2022 edition of NFPA 1144.

1.4 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard.

1.4.1 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.4.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

1.5 Units. In this standard, equivalent values in SI units shall not be considered as the requirement, as these values can be approximate. (See Table 1.5.)

Table 1.5 US-to-SI Conversions

Quantity	US Unit/ Symbol	SI Unit/Symbol	Conversion Factor
Length	inch (in.)	millimeter (mm)	1 in. = 25.4 mm
	foot (ft)	meter (m)	1 ft = 0.305 m
Area	square foot (ft ²)	square meter (m ²)	1 ft ² = 0.0929 m ²

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, Quincy, MA 02169-7471.

NFPA 1, *Fire Code*, 2021 edition.

NFPA 10, *Standard for Portable Fire Extinguishers*, 2022 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2022 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2022 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies*, 2022 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2019 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, 2022 edition.

NFPA 30, *Flammable and Combustible Liquids Code*, 2021 edition.

NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, 2019 edition.

NFPA 54, *National Fuel Gas Code*, 2021 edition.

NFPA 58, *Liquefied Petroleum Gas Code*, 2020 edition.

NFPA 72®, *National Fire Alarm and Signaling Code*®, 2022 edition.

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, 2022 edition.

NFPA 291, *Recommended Practice for Water Flow Testing and Marking of Hydrants*, 2022 edition.

NFPA 470, *Hazardous Materials Standards for Responders*, 2022 edition.

NFPA 703, *Standard for Fire-Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*, 2021 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2017 edition.

NFPA 1026, *Standard for Incident Management Personnel Professional Qualifications*, 2018 edition.

NFPA 1035, *Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist, and Youth Firesetter Program Manager Professional Qualifications*, 2015 edition.

NFPA 1051, *Standard for Wildland Firefighting Personnel Professional Qualifications*, 2020 edition.

NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*, 2017 edition.

NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2022 edition.

NFPA 1143, *Standard for Wildland Fire Management*, 2018 edition.

NFPA 1144, *Standard for Reducing Structure Ignition Hazards from Wildland Fire*, 2018 edition.

NFPA 1451, *Standard for a Fire and Emergency Service Vehicle Operations Training Program*, 2018 edition.

NFPA 1500™, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, 2021 edition.

NFPA 1521, *Standard for Fire Department Safety Officer Professional Qualifications*, 2020 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System and Command Safety*, 2020 edition.

NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*, 2021 edition.

NFPA 1616, *Standard on Mass Evacuation, Sheltering, and Re-entry Programs*, 2020 edition.

NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting*, 2022 edition.

NFPA 5000®, *Building Construction and Safety Code®*, 2021 edition.

2.3 Other Publications.

2.3.1 ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM D2898, *Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing*, 2017.

ASTM D3909/D3909M, *Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced With Mineral Granules*, 2014.

ASTM D6662, *Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards*, 2017.

ASTM D7032, *Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails*, 2017.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, 2020.

ASTM E108, *Standard Test Methods for Fire Tests of Roof Coverings*, 2020a.

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, 2020.

ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*, 2019a.

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C*, 2018.

ASTM E2768, *Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)*, 2018.

ASTM E2886/E2886M, *Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingement*, 2020.

ASTM E2957, *Standard Test Method for Resistance to Wildfire Penetration of Eaves, Soffits and Other Projections*, 2017.

2.3.2 AWWA Publications. American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235.

AWWA M31, *Distribution System Requirements for Fire Protection*, fourth edition, 2008.

2.3.3 FEMA EMI Publications. FEMA Emergency Management Institute, 16825 S. Seton Avenue, Emmitsburg, MD 21727.

ICS-100, *Introduction to the Incident Command System*, 2018.

IS-700, *An Introduction to the National Incident Management System*, 2018.

2.3.4 NWCG Publications. National Wildfire Coordinating Group, 3833 S. Development Avenue, Boise, ID 83705.

NFES 1077, *Incident Response Pocket Guide (IRPG)*, 2018.

NWCG L-180, *Human Factors in the Wildland Fire Service*, 2008.

NWCG S-130, *Firefighter Training*, 2008.

NWCG S-190, *Introduction to Wildland Fire Behavior*, 2020.

NWCG S-215, *Fire Operations in the Wildland/Urban Interface*, 2013.

2.3.5 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, 2018.

UL 790, *Standard Test Methods for Fire Tests of Roof Coverings*, 2018.

2.3.6 Other Publications.

Merriam-Webster's *Collegiate Dictionary*, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1, *Fire Code*, 2021 edition.

NFPA 101®, *Life Safety Code®*, 2021 edition.

NFPA 901, *Standard Classifications for Incident Reporting and Fire Protection Data*, 2021 edition.

NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2022 edition.

NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting*, 2022 edition.

NFPA 5000®, *Building Construction and Safety Code®*, 2021 edition.

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 defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

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.

3.2.7 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational

note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Accessory Building or Structure. Any building or structure used incidentally to another building.

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

3.3.3 Agency. A division of government with a specific function or a nongovernmental organization (e.g., a private business) that offers a particular kind of assistance.

3.3.4 Alternative. A system, condition, arrangement, material, or equipment submitted to the authority having jurisdiction as a substitute for a requirement in a standard.

3.3.5* Apparatus. A motor-driven vehicle or group of vehicles designed and constructed for the purpose of fighting fires.

3.3.6 Area.

3.3.6.1 Built-Out Area. Those portions of a development that have been populated to planned capacity with structures.

3.3.6.2 Gross Floor Area. The floor area within the inside perimeter of the outside walls of the building under consideration with no deduction for basements, hallways, stairs, closets, thickness of interior walls, columns, or other features.

3.3.6.3 Unbuilt Area. Those portions of a development intended to be built on that have not yet been populated with structures.

3.3.7 Attack.

3.3.7.1* Extended Attack. A wildland fire that cannot be controlled by initial attack resources within an established period of time as determined by the AHJ and additional firefighting resources are arriving, en route, or being ordered by the incident commander.

3.3.7.2* Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

3.3.8* Breakover. A fire edge that crosses a control line or natural barrier intended to confine the fire and the resultant fire.

3.3.9 Building. A structure, usually enclosed by walls and a roof, constructed to provide support or shelter for an intended occupancy.

3.3.10 Building Construction. Types of construction based on the combustibility and the fire resistance rating of a building's structural elements.

3.3.11* Burning Out. Setting fire inside a control line to consume the fuel between the edge of the fire and the control line.

3.3.12 Check-In. The process whereby resources first report to an incident.

3.3.13 Combustible (Material). A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible. [5000, 2021]

3.3.14 Command. The act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority.

3.3.15 Confine. To restrict the fire within determined boundaries established either prior to the fire or during the fire.

3.3.16 Contain. To take suppression action that can reasonably be expected to check the fire spread under prevailing and predicted conditions.

3.3.17 Control. The point in time when the perimeter spread of a wildland fire has been halted and can be reasonably expected to hold under foreseeable conditions.

3.3.18 Control Line. All constructed or natural barriers and the treated fire edge used to control a fire.

3.3.19 Cul-de-Sac. A roadway that ends in a circular turnaround.

3.3.20* Curb Cut. Reduced curb height to facilitate vehicle passage over or across a curb.

3.3.21 Dead End. A passageway, or portion thereof, from which there is only one means of egress.

3.3.22 Defensible Space. An area where the selection, location, grouping, and maintenance of combustible materials and vegetation are conducted in such a manner that the opportunity to ignite a structure or its attachments is minimized.

3.3.23 Driveway. A means of vehicular access to or from the land of a private property owner and a street, road, or highway.

3.3.24 Dwelling Unit. One or more rooms arranged for complete, independent housekeeping purposes, with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation. [5000, 2021]

3.3.25 Equipment.

3.3.25.1 Heavy Equipment. Ground vehicles used in the suppression of wildland fires, such as dozers, tractors, plows, and their transport vehicles. Heavy equipment does not include fire apparatus.

3.3.25.2 Wildland Firefighting and Urban Interface Firefighting Protective Clothing and Equipment. Items of compliant protective clothing and equipment products that provide protection from some risks, but not all risks, of emergency incident operations. [1977, 2022]

3.3.26 Evacuation. The temporary movement of people and their possessions from locations threatened by wildland fire.

3.3.27 Evacuation Plan. See 3.3.74.1.

3.3.28 Extended Attack. See 3.3.7.1.

3.3.29 Finance. The incident management section responsible for all incident costs and financial considerations.

3.3.30 Fire.

3.3.30.1* Prescribed Fire (Burning). Any fire ignited by management actions to meet specific objectives.

3.3.31 Fire Behavior. The manner in which a fire reacts to the variables of fuels, weather, and topography.

3.3.32 Fire Department. The governmental or other organization that is responsible for providing fire protection and other emergency services to an area.

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

3.3.34 Fire Hazard. A fuel complex, defined by its kind, arrangement, volume, condition, and location, that determines the ease of ignition and resistance to fire control.

3.3.35 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.

3.3.36 Fire Lane. An approved means of access or other passageway designated and identified to provide access for emergency apparatus where parking is prohibited.

3.3.37* Fire Protection. All measures taken to reduce the burden of fire on the quality of life.

3.3.38 Fire Protection System. Any fire alarm device or system or fire-extinguishing device or system, or combination thereof, 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.

3.3.39 Fire Resistive. Ignition-resistant construction methods using building materials and design features that reduce the vulnerabilities of buildings to ignite from wind-blown embers (firebrands) and other wildfire exposures.

3.3.40 Fire Suppression. All the work of confining and extinguishing wildland fires.

3.3.41 Fuel Modification. Any manipulation or removal of fuels to reduce the likelihood of ignition or the resistance to fire control.

3.3.42 Fuels. All combustible materials, including but not limited to vegetation and structures.

3.3.43 Ground Fuels. All combustible materials such as grass, duff, loose surface litter, tree or shrub roots, rotting wood, leaves, peat, or sawdust that typically support combustion.

3.3.44* Hazard Assessment System. A system to evaluate and rate pertinent factors such as fire and weather history, fuels, improvements, topography, and access to develop and implement mitigation strategies.

3.3.45 Heavy Equipment. See 3.3.25.1.

3.3.46* Heavy Timber Construction. Type IV (2HH) construction as defined in *NFPA 5000*.

3.3.47 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.

3.3.48 Hot Spot. A particularly active part of a wildland fire.

3.3.49 Ignition-Resistant Material. A type of building material that resists ignition or sustained flaming combustion. (*See 25.2.3.*)

3.3.50* Immediate Landscaped Area. The area of the structure ignition zone extending at least 30 ft (9 m) from the foundation of the structure, including the footprint on decks and all extensions, and the area in which the vegetation has been modified for reduced combustibility or aesthetic purposes, such as lawns and gardens.

3.3.51 Improved Property. A piece of land or real estate upon which a structure has been placed, a marketable crop is growing (including timber), or other property improvement has been made.

3.3.52 Incident. An occurrence, either human-caused or a natural phenomenon, that requires action or support by emergency services personnel to prevent or minimize loss of life or damage to property and/or natural resources.

3.3.53 Incident Action Plan (IAP). *See 3.3.74.2*

3.3.54 Incident Commander (IC). The individual responsible for the management of all incident operations at the incident site.

3.3.55* Incident Management System (IMS). A system that defines the roles and responsibilities to be assumed by responders and the standard operating procedures/standard operating guidelines (SOPs/SOGs) to be used in the management and direction of emergency incidents and other functions.

3.3.56* Initial Attack. *See 3.3.7.2.*

3.3.57* Jurisdiction. The power, right, or authority to interpret and apply the law.

3.3.58 Land Development. The change of use of a parcel of land or contiguous parcels of land controlled by a single landowner or by a group of landowners with or without a common agreement to control the land so as to provide the buildings and infrastructure for residential and/or commercial purposes.

3.3.59 Land Use. The type or degree of activity occurring or intended to occur on a piece of land.

3.3.60 Liaison. The individual responsible for the coordination of activities with assisting agencies.

3.3.61 Logistics. The incident management section responsible for providing facilities, services, support, and materials for the incident.

3.3.62 Lookout. A person designated to observe the fire or a portion of a fire and warn the crew when there is a change in fire activity or when there is danger of becoming trapped. (WFM-AAA)

3.3.63 Means of Access. The method by which vehicles travel to or from structures, including but not limited to roadways, driveways, fire lanes, and parking lots.

3.3.64 Mitigation. Action that moderates the severity of a fire hazard or risk.

3.3.65 Mop-up. The act of making a fire safe after it is controlled, such as extinguishing or removing burning material along or near the control line, felling dead trees (snags), and trenching logs to prevent rolling.

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

3.3.67 Noncombustible Material. *See Section 10.2.*

3.3.68* NWCG. National Wildfire Coordinating Group.

3.3.69 Occupancy. The purpose for which a building or other structure, or part thereof, is used or intended to be used. [5000, 2021]

3.3.70 Operations. The incident management section responsible for all tactical operations at the incident.

3.3.71 Out of Service. Resources assigned to an incident but unable to respond for mechanical, rest, or personnel reasons.

3.3.72 Patrol. To systematically observe and check a length of control line during or after its construction to prevent breakovers (slopovers), control spot fires, or extinguish overlooked hot spots.

3.3.73 Personal Protective Equipment. *See 3.3.25.2, Wildland Firefighting and Urban Interface Firefighting Protective Clothing and Equipment.*

3.3.74 Plan.

3.3.74.1 Evacuation Plan. A plan specifying safe and effective methods for the temporary movement of people and their possessions from locations threatened by wildland fire.

3.3.74.2* Incident Action Plan (IAP). A plan that contains objectives reflecting the overall incident strategy, specific tactical actions, and supporting information for a specific period of time.

3.3.74.3 Structure Protection Plan. A plan specifying safe and effective methods to protect structures and other improvements from the threat of damage from an advancing fire.

3.3.75 Planning. The incident management section responsible for the collection, evaluation, and dissemination of tactical information related to the incident and for preparation and documentation of incident management plans.

3.3.76 Preparedness. Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

3.3.77* Prescribed Fire (Burning). Any fire ignited by management actions to meet specific objectives.

3.3.78 Prevention. Activities, including public education, law enforcement, personal contact, and reduction of fuel hazards, directed at reducing the incidence of fires.

3.3.79 Protection in Place. The strategy and tactics used to protect or shelter people and/or animals from an advancing wildland fire in a safe area, as an alternative to evacuation.

3.3.80 Public Safety Element. A section of a land use plan that describes the hazards to public safety and how they are to be mitigated.

3.3.81 Resources. All personnel and major items of equipment that are available, or potentially available, for assignment to incidents.

3.3.82 Risk. A measure of the probability and severity of adverse effects that result from exposure to a hazard.

3.3.83 Road. Any accessway, not including a driveway, that gives access to more than one parcel and is primarily intended for vehicular access.

3.3.84 Roadway. Any public or private street, including bridges and rights of way.

3.3.85 Rural. Those areas that are not unsettled wilderness or uninhabitable territory but are sparsely populated with densities below 500 persons per square mile. [1142, 2022]

3.3.86 Shelter in Place. The strategy and tactics used to protect or shelter people and/or animals from an advancing wildland fire in a safe area, as an alternative to evacuation.

3.3.87 Size-Up. The observation and evaluation of existing factors in order to develop objectives, strategies, and tactics for fire suppression.

3.3.88 Slope. An upward or downward incline or slant, calculated as the rise divided by the run and expressed as a percentage.

3.3.89* Special Interest Area. Areas established and managed for their unique special feature.

3.3.90 Stakeholder. An individual, or representative of same, having an interest in the successful completion of a project. [101, 2021]

3.3.91* Standpipe. A pipe and attached hose valves and hose (if provided) used for conveying water to various parts of a building for firefighting purposes.

3.3.92 Story. The portion of a building located between the upper surface of a floor and the upper surface of the floor or roof next above. [5000, 2021]

3.3.93 Strategy. The general plan or direction selected to accomplish incident objectives.

3.3.94 Street.

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

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

3.3.95 Strike Team. Specified combinations of the same kind and type of resources, with common communications and a leader.

3.3.96 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.

3.3.97* Structure Assessment. An evaluation to determine the structure's potential to be ignited by an approaching wildland fire.

3.3.98* Structure Ignition Zone. The area around a specific structure and associated accessory structures, including all vegetation that contains potential ignition sources and fuels.

3.3.99* Structure Protection. To protect structures and other improvements from the threat of damage from an advancing wildland fire.

3.3.100 Structure Protection Plan. See 3.3.74.3.

3.3.101 Suburb or Suburban. Those moderately inhabited areas with population densities of at least 500 persons per square mile but less than 1000 persons per square mile. [1142, 2022]

3.3.102 Tactics. Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

3.3.103 Task Force. Any combination of single resources assembled for a particular tactical need, with common communications and a leader.

3.3.104 Topography. The land surface configuration.

3.3.105* Unified Command. A standard method to coordinate command of an incident where multiple agencies have jurisdiction.

3.3.106* Values at Risk. Public and private resources, which include, but are not limited to, property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.

3.3.107 Water Supply. A source of water for fire suppression activities.

3.3.108 Wildland. Land in an uncultivated, more or less natural state and covered by timber, woodland, brush, and/or grass. [901, 2021]

3.3.109* Wildland Fire. A fire that originates in or extends to vegetative fuels and that can involve structures or other combustible materials.

3.3.110 Wildland Fire Officer I. The person responsible for supervising and directing a single wildland fire suppression resource, such as a hand crew or an engine.

3.3.111 Wildland Fire Officer II. The person responsible for commanding and managing resources in the suppression of all aspects of an extended attack wildland fire or an initial attack exceeding the capability of the Wildland Fire Officer I.

3.3.112* Wildland Firefighter I. The person at the first level of progression who has demonstrated the knowledge and skills necessary to function safely as a member of a wildland fire suppression crew under direct supervision.

3.3.113* Wildland Firefighter II. The person at the second level of progression who has demonstrated the skills and depth of knowledge necessary to function under general supervision.

3.3.114* Wildland/Urban Interface. A geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels, resulting in the potential for ignition of the structures within the area from flames or firebrands of a wildland fire.

3.3.115* Wildland/Urban Interface Coordinator. The person responsible for the development of the plan(s) for the reduction of the fire risks and hazards associated in the wildland/urban interface.

3.3.116 Wildland/Urban Interface Protection Specialist. The person responsible for the development and/or implementation of a plan to protect people, animals, communities, individual structures, or other improvements from a wildland fire.

3.3.117 Wildland/Urban Intermix. An area where structures are intermingled with wildland fuels.

Chapter 4 Wildland Firefighter I (NFPA 1051)

4.1 Administration.

4.1.1* Scope. Chapters 4 through 9 identify the minimum JPRs for Wildland Firefighter I, Wildland Firefighter II, Wildland Fire Officer I, Wildland Fire Officer II, Wildland/Urban Interface Protection Specialist, and Wildland/Urban Interface Coordinator.

4.1.2* Purpose. The purpose of Chapters 4 through 9 are to specify the minimum JPRs for service as a Wildland Firefighter I, Wildland Firefighter II, Wildland Fire Officer I, Wildland Fire Officer II, Wildland/Urban Interface Protection Specialist, and Wildland/Urban Interface Coordinator.

4.1.2.1 Chapters 4 through 9 shall define a Wildland Firefighter I, Wildland Firefighter II, Wildland Fire Officer I, Wildland Fire Officer II, Wildland/Urban Interface Protection Specialist, and Wildland/Urban Interface Coordinator.

4.1.2.2 The intent of Chapters 4 through 9 shall be to ensure that personnel serving as a Wildland Firefighter I, Wildland Firefighter II, Wildland Fire Officer I, Wildland Fire Officer II, Wildland/Urban Interface Protection Specialist, and Wildland/Urban Interface Coordinator are qualified.

4.1.2.3* Chapters 4 through 9 shall not address organization or management responsibility.

4.1.2.4 It is not the intent of Chapters 4 through 9 to restrict any jurisdiction from exceeding or combining these minimum requirements.

4.1.2.5 JPRs for each level and position are the tasks personnel shall be able to perform to carry out the job duties.

4.1.2.6* A Wildland Firefighter I, Wildland Firefighter II, Wildland Fire Officer I, Wildland Fire Officer II, Wildland/Urban Interface Protection Specialist, and Wildland/Urban Interface Coordinator shall remain current with the general knowledge and skills and JPRs addressed for each level or position of qualification.

4.1.3 Application. The application of this standard is to specify which requirements within the document shall apply to Wildland Firefighter I, Wildland Firefighter II, Wildland Fire Officer I, Wildland Fire Officer II, Wildland/Urban Interface Protection Specialist, and Wildland/Urban Interface Coordinator.

4.1.3.1 The JPRs shall be accomplished in accordance with the requirements of the authority having jurisdiction (AHJ) and all applicable NFPA standards.

4.1.3.2 It shall not be required that the JPRs be mastered in the order in which they appear. The AHJ shall establish instructional priority and the training program content to prepare personnel to meet the JPRs of this standard.

4.1.3.3* Performance of each requirement of this standard shall be evaluated by personnel approved by the AHJ.

4.1.3.4 The JPRs for each level or position shall be completed in accordance with recognized practices and procedures or as defined by law or by the AHJ.

4.1.3.5 Qualification Requirements.

4.1.3.5.1 Personnel assigned the duties of Wildland Firefighter I shall meet all the requirements defined in Chapter 4 prior to being qualified.

4.1.3.5.2 Personnel assigned the duties of Wildland Firefighter II shall meet all the requirements defined in Chapter 5 prior to being qualified.

4.1.3.5.3 Personnel assigned the duties of Wildland Fire Officer I shall meet all the requirements defined in Chapter 6 prior to being qualified.

4.1.3.5.4 Personnel assigned the duties of Wildland Fire Officer II shall meet all the requirements defined in Chapter 7 prior to being qualified.

4.1.3.5.5 Personnel assigned the duties of Wildland/Urban Interface Protection Specialist shall meet all the requirements defined in Chapter 8 prior to being qualified.

4.1.3.5.6 Personnel assigned the duties of Wildland/Urban Interface Coordinator shall meet all the requirements defined in Chapter 9 prior to being qualified.

4.1.3.6 The AHJ shall provide personal protective clothing and the equipment necessary to conduct assignments.

4.1.3.7 JPRs involving exposure to products of combustion shall be performed in approved PPE.

4.1.3.8 Prior to training to meet the requirements of this standard, personnel shall meet the following requirements:

- (1) Educational requirements established by the AHJ
- (2) Age requirements established by the AHJ
- (3)* Medical requirements established by the AHJ
- (4)* Job-related physical performance requirements established by the AHJ

4.1.3.9 Wherever in Chapters 4 through 9 the terms *rules, regulations, policies, procedures, supplies, apparatus, or equipment* are referred to, it is implied that they are those of the AHJ.

4.1.3.10* For each level of progression, as identified in Chapters 4 through 9, persons shall participate in continuing professional development activities to maintain competency with the JPRs covered in this standard for each level and position for which they are professionally qualified.

4.2 General. The Wildland Firefighter I shall meet the JPRs defined in Sections 4.2 through 4.6.

4.2.1* General Prerequisite Knowledge. Fireline safety and use and limitations of personal protective equipment; AHJ policy on fire shelter use; basic wildland fire behavior; fire suppression techniques; basic wildland fire tactics; the firefighter's role within the AHJ incident management system; AHJ required first aid; and NFES 1077, *Incident Response Pocket Guide (IRPG)*.

4.2.2* General Prerequisite Skills. Basic verbal communications and the use of required personal protective equipment.

4.3 Human Resource Management. No JPRs at this level.

4.4 Preparedness.

4.4.1 Definition of Duty. Activities in advance of fire occurrence to ensure safe and effective suppression action.

4.4.2* Maintain assigned personal protective equipment, given the standard equipment issue, so that the equipment is serviceable and available for use on the fireline and defects are recognized and reported to the supervisor.

(A) Requisite Knowledge. Maintenance of personal protective equipment, including inspection, the recognition of unserviceable items, and proper cleaning procedures.

(B) Requisite Skills. No requisite skills required at this level.

4.4.3* Maintain assigned suppression hand tools and equipment, given tools and equipment and AHJ maintenance specifications, so that assigned equipment is maintained and serviceable and defects are recognized and reported to the supervisor.

(A) Requisite Knowledge. Inspection of tools and assigned suppression equipment, the recognition of unserviceable items, and required maintenance techniques.

(B)* Requisite Skills. Sharpening and other maintenance techniques for assigned suppression equipment, and use of required maintenance equipment.

4.4.4* Maintain personal gear kit, given a deployment and AHJ policies, so that mobilization response readiness meets AHJ requirements.

(A) Requisite Knowledge. Contents of a personal gear kit, type and duration of the incident, and AHJ policies.

(B) Requisite Skills. None specified.

4.5 Mobilization. No JPRs at this level.

4.6 Suppression.

4.6.1 Definition of Duty. All activities to confine and extinguish a wildland fire, beginning with dispatch.

4.6.2 Assemble and prepare for response, given an assembly location, an assignment, incident location, mode of transportation, and the time requirements, so that arrival at the incident with the required personnel and equipment meets AHJ guidelines.

(A)* Requisite Knowledge. Equipment requirements, AHJ time standards and special transportation considerations (weight limitations), and AHJ safety and operational procedures for various transportation modes.

(B) Requisite Skills. None specified.

4.6.3 Recognize hazards and unsafe situations, given a wildland or wildland/urban interface fire and the standard safety policies and procedures of the AHJ, so that the hazard(s) and unsafe condition(s) are communicated to the supervisor and appropriate action is taken.

(A) Requisite Knowledge. Basic wildland fire safety, fire behavior, and suppression methods.

(B) Requisite Skills. None specified.

4.6.4 Construct a fireline, given a wildland fire, AHJ line construction standards, suppression tools, water or other suppression agents, and equipment, so that the fireline conforms to the construction standard.

(A) Requisite Knowledge. Principles of fireline construction, techniques, and standards.

(B)* Requisite Skills. Proper use of hand tools, fire stream practices, and agent application.

4.6.5 Secure the fireline, given a wildland fire and suppression tools, water or other suppression agents, and equipment, so that burning materials and unburned fuels that threaten the integrity of the fireline are located and abated.

(A) Requisite Knowledge. Line improvement techniques and safety considerations.

(B)* Requisite Skills. Use of basic ignition devices only under direct supervision.

4.6.6 Describe the methods to reduce the threat of fire exposure to improved properties given a wildland/urban interface fire, suppression tools, and equipment so that improvements are protected.

(A) Requisite Knowledge. Wildland fire behavior, wildland fuel removal, structure protection methods, and equipment and personnel capabilities.

(B) Requisite Skills. The use of methods to protect improvements.

4.6.7 Mop up fire area, given a wildland fire, suppression tools, and water or other suppression agents and equipment, so that burning fuels that threaten escape are located and extinguished.

(A) Requisite Knowledge. Mop-up principles, techniques, and standards.

(B) Requisite Skills. Use of basic tools and techniques to perform mop-up operations.

4.6.8 Patrol the fire area, given a wildland fire, suppression tools, and equipment, so that containment of the fire area is maintained.

(A) Requisite Knowledge. Patrol principles, techniques, and standards.

(B) Requisite Skills. Observe, identify, and take action on potential threats.

Chapter 5 Wildland Firefighter II (NFPA 1051)

5.1* General. Prior to progressing to the Wildland Firefighter II level, the Wildland Firefighter I shall meet the JPRs defined in Sections 5.1 through 5.5.

5.1.1* General Prerequisite Knowledge. The Wildland Firefighter II role within the incident management system, basic map reading and compass use or other locating device, radio procedures, chain saws and pumps, and record keeping.

5.1.2 General Prerequisite Skills. Orienteering, operation of chain saws and pumps, record keeping, and radio use.

5.2 Human Resource Management.

5.2.1 Evaluate the readiness of assigned crew members, given a wildland fire, an assigned task, and AHJ equipment standards, so that crew members are equipped and supplied for suppression duties.

(A) Requisite Knowledge. AHJ standards and personnel inspection procedures.

(B) Requisite Skills. Inspect members' personal protective equipment, tools, supplies, qualifications, and physical fitness level.

5.2.2 Brief assigned personnel, given an assignment, supporting information, and equipment requirements, so that the personnel are informed of specific tasks, standards, safety, operational, and special interest area considerations.

(A)* Requisite Knowledge. Incident and task information necessary to carry out assignments.

(B) Requisite Skills. Briefing skills.

5.2.3* Lead wildland firefighters in the performance of a task, given an assignment and performance standards, so that the task is completed within the standards in accordance with AHJ guidelines.

(A) Requisite Knowledge. Leadership techniques for small groups.

(B) Requisite Skills. The application of requisite knowledge to lead wildland firefighters to complete the task in a manner that is within the standard.

5.3 Preparedness.

5.3.1 Definition of Duty. Responsibilities in advance of fire occurrence to ensure that tools, equipment, and supplies are fire ready.

5.3.2* Maintain chain saws and portable pumps as designated by the AHJ, given AHJ maintenance specifications, supplies, and tools, so that equipment is maintained and serviceable and defects are recognized and repaired.

(A) Requisite Knowledge. Maintenance procedures for chain saws and portable pumps as designated by the AHJ.

(B) Requisite Skills. Preventive maintenance and repair of chain saws and portable pumps as designated by the AHJ.

5.3.3 Inspect tools and equipment, given AHJ specifications, so that suitability of the tools and equipment for fire use is ensured.

(A) Requisite Knowledge. Tool and equipment inspection guidelines.

(B) Requisite Skills. The ability to inspect the tools and equipment according to guidelines.

5.4 Mobilization. No JPRs at this level.

5.5 Suppression.

5.5.1 Definition of Duty. All activities to contain and extinguish a wildland or wildland/urban interface fire beginning with dispatch.

5.5.2 Select fireline construction methods, given a wildland fire and line construction standards, so that the technique used is compatible with the conditions and meets AHJ standards.

(A) Requisite Knowledge. Resource capabilities and limitations, fireline construction methods, and AHJ standards.

(B) Requisite Skills. None specified.

5.5.3 Reduce the risk of fire exposure to improved properties, given a wildland or wildland/urban interface fire and available tools and equipment, so that improvements are protected from fire.

(A) Requisite Knowledge. Knowledge of fire behavior in both wildland and improved properties, the effects of fuel modification to reduce the hazard, and NWCG S-215, *Fire Operations in the Wildland/Urban Interface*.

(B) Requisite Skills. The use of tools and equipment to protect the improved property.

5.5.4* Operate a chain saw, given an assignment at a wildland fire and operational standards, so that the assignment is completed in a safe manner.

(A) Requisite Knowledge. AHJ standards for chain saw operation and safety, tool selection, and personal protective equipment used during saw use.

(B)* Requisite Skills. Site preparation, handling and cutting techniques, use of wedges, saws, and equipment storage and transportation.

5.5.5 Operate water delivery equipment, given an assignment at a wildland fire and operational standards, so that the proper equipment is selected, desired nozzle pressure is attained, and flow is maintained.

(A)* Requisite Knowledge. Basic hydraulics, pump and water delivery system capabilities, operation of pumps, basic drafting, and associated equipment.

(B) Requisite Skills. Placement, operation, and system setup.

5.5.6 Operate a portable radio, given AHJ policies, so that communication is clear, concise, and accurate.

(A) Requisite Knowledge. AHJ operational standards for portable radios.

(B) Requisite Skills. Operation of portable radios.

5.5.7* Secure the area of suspected fire origin and associated evidence, given a wildland fire and AHJ procedures, so that all evidence or potential evidence is protected from damage or destruction and reported to a supervisor.

(A) Requisite Knowledge. Knowledge of types of evidence and the importance of site security and evidence preservation.

(B) Requisite Skills. Evidence preservation techniques and use of marking devices for site security.

5.5.8 Serve as a lookout, given an assignment at a wildland fire as per AHJ procedures, so that firefighters are updated or warned when conditions change.

(A)* Requisite Knowledge. Basic fire behavior and how to recognize hazardous situations, communications methods, equipment, and procedures.

(B) Requisite Skills. The ability to accurately describe fire behavior and changes in fire behavior through verbal communication, hand signals, or use of communication equipment.

Chapter 6 Wildland Fire Officer I (NFPA 1051)

6.1 General. Prior to progressing to the Wildland Fire Officer I level, the Wildland Firefighter II shall meet the JPRs defined in Sections 6.1 through 6.5.

6.1.1 Prerequisite Knowledge. Authority and responsibility of cooperating jurisdictional agencies, formal and informal agreements between jurisdictional agencies, the incident management system used by the jurisdiction, and the Wildland Fire Officer I role within that system.

6.1.2 Prerequisite Skills. None specified.

6.2 Human Resource Management.

6.2.1* Definition of Duty. Lead and supervise human resources to accomplish assignments in a safe and efficient manner.

6.2.2 Evaluate assigned personnel, given AHJ personnel performance standards, so that members are capable of performing assigned tasks and individuals not meeting the standards are identified and that corrective actions are taken.

(A) Requisite Knowledge. AHJ personnel policies and procedures, performance standards, and evaluation.

(B) Requisite Skills. The ability to observe, evaluate, counsel, and document personnel as to fitness for duty in accordance with AHJ policies and procedures.

6.2.3 Verify the qualifications of assigned personnel, given an assignment or task, so that individual firefighter qualifications are appropriate, deficiencies are identified and reported, and corrective action is taken.

(A) Requisite Knowledge. AHJ qualifications standards.

(B) Requisite Skills. The ability to assess personnel qualifications for assignment in accordance with AHJ policies and procedures.

6.2.4 Provide for first aid or medical treatment, given an injured or ill firefighter and AHJ policies and procedures, so that treatment is provided, appropriate notifications are made, and required administrative reports are completed.

(A) Requisite Knowledge. AHJ accident and illness reporting procedures.

(B) Requisite Skills. Report writing and written communications.

6.2.5 Evaluate job performance of assigned personnel, given AHJ standards, so that the information is provided to the individual being evaluated and all required forms are completed.

(A) Requisite Knowledge. Basic performance evaluation.

(B) Requisite Skills. Administrative and written communication skills.

6.3 Preparedness.

6.3.1 Ensure overall readiness of assigned crew, vehicle, and equipment, given AHJ standards, policies, and procedures, so that operational readiness is maintained.

(A) Requisite Knowledge. Crew needs, equipment readiness, and AHJ standards, policies, and procedures.

(B) Requisite Skills. Assessment, decision-making, and written and verbal communication skills.

6.4 Mobilization.

6.4.1 Definition of Duty. Collect AHJ dispatch information, assemble assigned resources, travel to designated location, and check in.

6.4.2 Obtain complete information from AHJ dispatch, given AHJ standard operating procedures, so that travel route, assignment, time needed, and point of contact are determined.

(A) Requisite Knowledge. AHJ dispatch, travel, accident, and equipment breakdown procedures.

(B) Requisite Skills. None specified.

6.5 Suppression.

6.5.1* Definition of Duty. Supervision of a single resource involved in wildland fire suppression, and when first on scene, assume command of initial attack incident, until relieved.

6.5.2* Size up an incident to formulate an incident action plan, given a wildland fire and available resources, so that incident objectives are set and strategies and tactics are applied according to AHJ policies and procedures.

(A) Requisite Knowledge. Size-up procedures, fire behavior, resource availability and capability, and suppression priorities.

(B)* Requisite Skills. Identification of values at risk, setting objectives, and selection of correct wildland fire suppression strategies.

6.5.3* Develop an initial report on conditions, given incident information and AHJ policies and procedures, so that required incident information is communicated to the AHJ communications center and updated as needed.

(A) Requisite Knowledge. AHJ incident information requirements and size-up procedures.

(B) Requisite Skills. Identification and communication of relevant incident information.

6.5.4* Establish an incident command post (ICP), given AHJ policies and procedures, so that the location is identified and communicated to personnel.

(A) Requisite Knowledge. Factors affecting appropriate ICP locations.

(B) Requisite Skills. Ability to establish an ICP.

6.5.5 Deploy resources to suppress a wildland fire, given an assignment, personnel, equipment, and AHJ policies and procedures, so that appropriate suppression actions are taken and safety of personnel is ensured.

(A)* Requisite Knowledge. Fireline location and construction techniques, ignition procedures, capabilities of firefighting equipment and personnel, radio communications capabilities and protocols, and techniques for the proper and safe deployment of the assigned resources.

(B)* Requisite Skills. The ability to assess and assign personnel and equipment.

6.5.6* Maintain incident records, given AHJ policies and procedures and applicable forms, so that required information is documented.

(A) Requisite Knowledge. AHJ incident documentation procedures.

(B) Requisite Skills. None specified.

6.5.7 Evaluate incident conditions, given a wildland fire, so that progress, changes in fuels, topography, weather, fire behavior, personnel safety, and other significant events are identified and communicated to the supervisor and to assigned and adjoining personnel.

(A)* Requisite Knowledge. Intermediate wildland fire behavior.

(B) Requisite Skills. Collect wildland fire weather, fuels, and topographic information.

6.5.8 Communicate with supervisors, crew members, and adjoining personnel, given a wildland fire incident, so that progress, changes in conditions, fire behavior, and other significant events are current.

(A) Requisite Knowledge. Wildland fire behavior, other hazards and factors related to the wildland fire environment.

(B) Requisite Skills. Ability to communicate.

6.5.9* Provide for the logistical needs of assigned resources, given a wildland fire, assigned resources, and AHJ policies and procedures, so that personnel and equipment needs are met in accordance with AHJ policies.

(A) Requisite Knowledge. Short- and long-term needs as determined by the incident.

(B) Requisite Skills. Identification of logistical needs.

6.5.10 Analyze incident needs, given assigned resources and incident status, so that additional resources needed are ordered or excess resources are identified and released in accordance with AHJ policies and procedures.

(A) Requisite Knowledge. AHJ policies and procedures related to resource ordering and release.

(B) Requisite Skills. Decision making.

6.5.11 Provide incident information to the incoming replacement incident commander, given a wildland fire, so that the transfer of command is completed and the new incident commander has the information necessary to operate.

(A) Requisite Knowledge. AHJ policies and procedures for transfer of command.

(B) Requisite Skills. The ability to communicate verbally and in writing and to document.

6.5.12 Deploy resources to mop up a wildland fire, given a wildland fire, personnel, equipment, and AHJ policies and procedures, so that appropriate mop-up actions are taken.

(A) Requisite Knowledge. Wildland fire behavior, environment factors, and resource capability.

(B) Requisite Skills. The ability to conduct a risk assessment.

6.5.13 Complete wildland fire suppression operations, given a wildland fire that has been controlled and mopped up in accordance with AHJ policies and procedures, so that the fire area is extinguished and resources are returned to service.

(A) Requisite Knowledge. AHJ policies and procedures for demobilization and termination of the incident.

(B) Requisite Skills. Decision making.

6.5.14* Respond to requests for incident information, given AHJ policies and procedures, so that response is accurate, within the policies, and provided in a time-sensitive manner.

(A) Requisite Knowledge. AHJ policies and procedures for release of incident information.

(B) Requisite Skills. The ability to communicate verbally and in writing.

6.5.15 Complete personnel time and equipment use records, given AHJ policies, procedures, and related forms, so that the information is accurate and in compliance with standards established by the AHJ.

(A) Requisite Knowledge. Basic wildland fire business management and AHJ policies and procedures for proper record keeping.

(B) Requisite Skills. The ability to communicate in writing.

6.5.16* Prepare final incident reports, given an extinguished wildland fire and AHJ policies and procedures, so that the reports are complete, accurate, and submitted on time.

(A) Requisite Knowledge. AHJ incident reporting policies and procedures.

(B) Requisite Skills. The ability to fill out forms.

Chapter 7 Wildland Fire Officer II (NFPA 1051)

7.1 General. Prior to progressing to the Wildland Fire Officer II level, the Wildland Fire Officer I shall meet the JPRs defined in Sections 7.1 through 7.5.

7.1.1 Prerequisite Knowledge. Authority and responsibility for implementing formal and informal agreements between jurisdictional agencies, the incident management system used by the jurisdiction, and the Wildland Fire Officer II's role within that system.

7.1.2 Prerequisite Skills. None specified.

7.2 Human Resource Management. No JPRs at this level.

7.3 Preparedness. No JPRs at this level.

7.4 Mobilization.

7.4.1* Supervise multiple resources, given an assignment and resources, so that they are mobilized in accordance with AHJ policies and procedures.

(A) Requisite Knowledge. AHJ policies and procedures covering the movement of multiple resources.

(B) Requisite Skills. The ability to assess the readiness of assigned resources.

7.5 Suppression.

7.5.1 Definition of Duty. Command multiple resources in the suppression of a wildland fire that exceeds the qualification level of the Wildland Fire Officer I.

7.5.2* Develop, validate, modify, and document an incident action plan for each operational period, given an action plan, so that strategies and tactics are applied according to AHJ policies and procedures in accordance with incident objectives.

(A) Requisite Knowledge. Availability and capability of resources and agency suppression priorities based on personnel safety and values at risk.

(B)* Requisite Skills. Identification of values at risk, objective setting, and selection of correct wildland fire suppression strategies and tactics.

7.5.3 Evaluate the need for and location of incident facilities, given AHJ policies and procedures, so that the location is sited, identified, and communicated to personnel.

(A) Requisite Knowledge. Factors affecting the need for appropriate incident facilities.

(B) Requisite Skills. Ability to evaluate and establish incident facilities.

7.5.4 Maintain incident records, given AHJ policies and procedures and applicable forms, so that required information is documented.

(A) Requisite Knowledge. AHJ incident documentation procedures.

(B) Requisite Skills. Record keeping.

7.5.5* Obtain incident information from the outgoing incident commander, given a wildland fire, so that the transfer of command is completed and the new incident commander has the information necessary to operate.

(A) Requisite Knowledge. AHJ policies and procedures for transition in command.

(B) Requisite Skills. The abilities to communicate verbally and in writing and to document.

Chapter 8 Wildland/Urban Interface Protection Specialist (NFPA 1051)

8.1 General. Prior to progressing to the Wildland/Urban Interface Protection Specialist level, the Wildland Fire Officer II shall meet the JPRs defined in Sections 8.1 through 8.6.

8.1.1 Prerequisite Knowledge. Authority and responsibility of assisting and cooperating agencies, the incident management system used by the AHJ, and the role of the Wildland/Urban Interface Protection Specialist within the system; Chapters 19 through 26 of this standard; and basic understanding of structural protection in the wildland/urban interface.

8.1.2 Prerequisite Skills. The ability to prepare written reports and protection plans and implement them and to work with cooperating agencies.

8.2 Human Resource Management. No JPRs at this level.

8.3 Preparedness. No JPRs at this level.

8.4 Mobilization. No JPRs at this level.

8.5 Suppression.

8.5.1 Risk and Hazard Assessment. Assess the actual and potential risks, hazards, and values at risk for the wildland/urban interface fire incident, given incident intelligence, predicted fire behavior, and AHJ policies, so that all risks, hazards, and values at risk are identified for planned mitigation efforts.

(A) Requisite Knowledge. Have an understanding of the factors that constitute wildland/urban interface fire hazards and risks and the impacts they will have on fire suppression efforts.

(B) Requisite Skills. The ability to prioritize the various risks and hazards as a plan of operations is being developed.

8.5.2 Hazard Mitigation Practices. Apply appropriate action(s), given resources, materials, and strategies, so that the risks, hazards, and values at risk are mitigated.

(A) Requisite Knowledge. An understanding of the various construction materials and types; the requirements for defensible space as related to fuels, topography, and the building construction; and the various mitigation actions associated with the various risks and hazards.

(B) Requisite Skills. The ability to assess, plan, and communicate.

8.5.3 Information. Provide internal and external briefings on the development of a structure protection plan, given specified audiences, AHJ policy, and an overall education strategy, so that the specified audiences are informed regarding the wildland/urban interface protection effort.

(A) Requisite Knowledge. Understanding of public presentation techniques.

(B) Requisite Skills. The ability to communicate.

8.5.4 Evacuation Planning. Participate in an evacuation or shelter-in-place plan in conjunction with assisting and cooperating agencies, given incident intelligence, predicted fire behavior, community maps, and resources, so that the public is protected.

(A) Requisite Knowledge. Understanding of the responsibilities of the various authorities as well as local, state, and federal laws and regulations that govern evacuations, and shelter-in-place techniques.

(B) Requisite Skills. The ability to participate in an evacuation plan for an incident and to activate an evacuation plan.

8.5.5 Hazardous Materials. Analyze the potential involvement of various hazardous materials, given incident information and resources, so that hazardous conditions are identified and mitigated.

(A) Requisite Knowledge. A working knowledge of the types of hazardous materials that can be involved and the hazards they can pose to the public, firefighting personnel, and the environment; NFPA 470, awareness level JPRs.

(B) Requisite Skills. The ability to assess and to communicate verbally and in writing.

8.5.6 Structure Protection Plan. Develop and monitor a structure protection plan, given incident intelligence, current and predicted fire behavior, community data, and available resources, so that various structures and other improvements that are or might be threatened during a wildland/urban interface incident are protected and the plan is modified as needed.

(A) Requisite Knowledge. The availability and capability of fire apparatus, equipment, and personnel that can be involved in an incident; the elements of a structure protection plan; incident objectives; and the effects of weather.

(B) Requisite Skills. The ability to develop and implement a structure protection plan and to constantly evaluate the wildland fire situation and change and modify the structure protection plan accordingly.

8.6 Post-Incident — Data Collection.

8.6.1 Develop a plan to gather damage assessment data, given incident information, data, structure valuation estimate, and resources for a wildland/urban interface fire, so that all pertinent data are collected for analysis.

(A) Requisite Knowledge. An understanding of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) methodology and equipment and methods to obtain damage assessment data.

(B) Requisite Skills. The ability to develop and implement a plan to gather damage assessment data and the tools to accomplish the task.

Chapter 9 Wildland/Urban Interface Coordinator (NFPA 1051)

9.1 General. The Wildland/Urban Interface Coordinator shall meet the JPRs as defined in Sections 9.1 through 9.9 and meet all of the requirements of Public Fire and Life Safety Educator II specified in NFPA 1035.

9.1.1 Prerequisite Knowledge. Requirements of Wildland Firefighter I specified in Chapter 4; NWCG S-215, *Fire Operations in the Wildland/Urban Interface*; Chapters 24 through 26 of this standard; applicable codes and standards of the AHJ; and funding sources, including grants.

9.1.2 Prerequisite Skills. The ability to communicate verbally and in writing and to write reports and grants.

9.2 Human Resource Management. No JPRs at this level.

9.3 Preparedness.

9.3.1 Analyze and evaluate the jurisdictional area, given a wildland/urban interface area, so that a hazard, risk, and values at-risk rating is established in accordance with the adopted policies, procedures, codes, and standards of the AHJ.

(A) Requisite Knowledge. An applicable hazard assessment system to be used to assign a level of risk to life and improved property from wildland fire.

(B) Requisite Skills. The ability to apply the hazard assessment system to a project, property, or jurisdictional area.

9.3.2 Analyze the public safety element, given the general and growth management plans of the AHJ, so that all wildland/urban interface fire issues are identified.

(A) Requisite Knowledge. Fire and life safety issues, public safety issues, community concerns, available community resources, governmental regulations, environmental issues, and technological changes.

(B) Requisite Skills. The ability to analyze trends and demographics and prepare public safety elements and plans.

9.3.3 Assist planners and developers in the planning phase of subdivisions, given a proposed project, so that compliance with wildland/urban interface policies, procedures, codes, and standards of the AHJ is ensured.

(A) Requisite Knowledge. Subdivision planning and jurisdictional guidelines.

(B) Requisite Skills. The ability to interact with planners, developers, contractors, government officials, partnerships, and collaborative efforts.

9.3.4 Process a plan review application, given a proposed project in a wildland/urban interface area, so that the application is evaluated and processed in accordance with the applicable policies, procedures, codes, and standards of the AHJ.

(A) Requisite Knowledge. Application process for plan review and the applicable policies, procedures, codes, and standards.

(B) Requisite Skills. The ability to communicate verbally and in writing on matters related to the applicable policies, procedures, codes, and standards.

9.3.5 Facilitate the resolution of deficiencies identified during the plan review, given a submittal and the established practices and procedures of the AHJ, so that deficiencies are identified, documented, and reported to the plan submitter with applicable references and alternative methods for compliance.

(A) Requisite Knowledge. Policies and procedures of the AHJ regarding the communication of discrepancies and the appeals process as related to the codes and standards of the AHJ.

(B) Requisite Skills. The ability to communicate verbally and in writing.

9.3.6 Write recommended conditions of approval for proposed projects, given wildland/urban interface standards of the AHJ, so that the project is in compliance.

(A) Requisite Knowledge. Knowledge of fire-resistive construction and landscaping techniques and subdivision regulations, procedures, and processes of the AHJ.

(B) Requisite Skills. The ability to work with and educate planners, developers, contractors, and homeowners, and to write clearly and concisely and speak during public meetings before planning and zoning boards, homeowners' associations, and special interest groups.

9.3.7 Investigate wildland/urban interface safety complaints, given a reported situation or condition, so that complaint information is recorded and processed.

(A) Requisite Knowledge. Applicable policies, procedures, codes, and standards adopted by the AHJ.

(B) Requisite Skills. The ability to interpret policies, procedures, codes, and standards, communicate verbally and in writing, recognize problems, and refer complaints.

9.4 Mobilization. No JPRs at this level.

9.5 Suppression. No JPRs at this level.

9.6 Post-Incident.

9.6.1 Collect data on wildland/urban interface fire threats, losses, effectiveness of mitigation measures, and public education, given a data collection system and needed tools, so that all pertinent data are collected for analysis.

(A) Requisite Knowledge. Data collection, evaluation methods, and statistical analysis methods and resources.

(B) Requisite Skills. The ability to collect and analyze data in order to implement an evaluation strategy.

9.7 Administration.

9.7.1 Recommend policies and procedures, given management objectives, for the delivery of wildland/urban interface programs so that the policies and procedures are in accordance with the codes and standards of the AHJ.

(A) Requisite Knowledge. Policies and procedures of the AHJ related to code enforcement, and sources of detailed and technical information relating to fire protection and life safety.

(B) Requisite Skills. The ability to identify effective construction methods and materials related to fire safety, to read and interpret construction plans and specifications, to communicate verbally and in writing, to educate, to conduct research, to make decisions, to recognize problems, and to resolve conflicts.

9.7.2 Develop written correspondence to communicate fire protection and prevention requirements, given wildland/urban interface issues, so that the correspondence reflects research and accurate interpretation of applicable policies, procedures, codes, and standards.

(A) Requisite Knowledge. Applicable policies, procedures, codes, and standards adopted by the AHJ and the interrelationship among those codes and regulations.

(B) Requisite Skills. The ability to conduct code-related research and to clearly express code requirements verbally and in writing.

9.7.3 Select or create checklists and forms, given applicable policies, procedures, codes, and standards of the AHJ, so that information required and used to address the wildland/urban interface fire issues is clear and concise.

(A) Requisite Knowledge. Elements required by the applicable policies, procedures, codes, and standards.

(B) Requisite Skills. The ability to clearly express requirements of the AHJ in writing and organize those requirements in a logical and complete format for use as a guide to perform uniform and effective interface safety inspections.

9.8 Hazard Mitigation.

9.8.1 Generate a strategic plan with necessary procedural guidelines and mitigation treatments, given a fire-prone ecosystem, a wildland/urban interface area, applicable policies, procedures, codes, and standards, so that the strategic plan meets AHJ requirements for adoption.

(A) Requisite Knowledge. Applicability and effectiveness of various mitigation treatments and the application of pertinent policies, procedures, codes, and standards.

(B) Requisite Skills. The ability to discern the local political and budgetary environment.

9.8.2 Provide leadership, given a strategic plan and procedural guidelines, so that fuel modifications designed to reduce wildland/urban interface hazards are implemented.

(A) Requisite Knowledge. Techniques pertinent to selective tree thinning, brush disposal, pruning, grazing, mowing, prescribed fire (including air quality and smoke management), and chemical treatments.

(B) Requisite Skills. The ability to prepare clear written treatment prescriptions, to demonstrate the capability to communicate orally in a clear, concise, and effective manner, willingness to interact with diverse groups, and a capacity to initiate and sustain needed activities.

9.8.3 Recommend mitigation strategies, given an existing development or a proposed project, so that strategies are applied in accordance with the applicable policies, procedures, codes, and standards.

(A) Requisite Knowledge. Fuel types, wildland fire behavior, building construction, defensible space, and mitigation strategies.

(B) Requisite Skills. The ability to select an effective wildland/urban interface mitigation strategy.

9.8.4 Recommend modifications to codes and standards of the AHJ, given wildland/urban interface issues, so that the proposed codes and standards are written to address the problem, need, or deficiency.

(A) Requisite Knowledge. State statutes or local ordinances establishing or empowering the AHJ to adopt, enforce, and revise codes and standards; the legal instruments establishing or adopting codes and standards; and the development and adoption process for legislation or regulations.

(B) Requisite Skills. The ability to recognize problems, communicate, and identify risk and cost benefits.

9.8.5 Develop hazard mitigation plans, given policies, procedures, codes, and standards, so that an existing development within the jurisdictional area is brought into compliance.

(A) Requisite Knowledge. A knowledge of wildland/urban interface hazard mitigation planning documents and the use of prescribed burning and other fuel modification techniques, defensible space concepts, building construction, codes and standards, landscaping, and maintenance.

(B) Requisite Skills. The ability to develop written plans.

9.8.6 Provide technical expertise to AHJ staff, developers, home builders, homeowners, landscapers, consultants, and others, given an interface area, so that the wildland/urban interface threat is reduced.

(A) Requisite Knowledge. Understanding of the roles and responsibilities of other agencies, departments, and personnel whose involvement is crucial to address the threat.

(B) Requisite Skills. Demonstrated ability to educate others to achieve goals specified in a strategic plan.

9.9 Public Education.

9.9.1 Develop and implement a public education program, given a comprehensive educational strategy, so that the hazards and risks associated with the wildland/urban interface are reduced.

(A) Requisite Knowledge. Understanding of local fire prevention goals, fundamentals of public education program delivery methods, and available tools to get the public to respond.

(B) Requisite Skills. The ability to identify individual and collective fire education needs and to recognize effective communication tools necessary to implement and measure success of delivery strategies.

9.9.2 Develop or oversee the development of written, electronic, audio-visual, or display material, given objectives and specified audience(s), so that affected interests are educated and informed on the wildland/urban interface fire environment and mitigation techniques.

(A) Requisite Knowledge. Data resources and information systems, including format and materials, learning theory, computer, video and audio writing, editing, and social media formats and platforms.

(B) Requisite Skills. The ability to assemble information in a specific format, generate written or audio-visual materials, write persuasively and effectively, recognize and use powerful images, and identify and organize outreach to affected audiences and the community at large.

9.9.3 Coordinate or provide presentations, given identified fire and life safety goals and objectives, so that the public is informed on wildland/urban interface issues.

(A) Requisite Knowledge. Potential community partners with shared concerns and resources, community concerns, and available community resources.

(B) Requisite Skills. The ability to facilitate meetings, motivate partners to achieve goals, and prepare presentations.

Chapter 10 General Requirements for Fire Protection Infrastructure in Wildland, Rural, and Suburban Areas (NFPA 1141)

10.1 Administration.

10.1.1* Scope. Chapters 10 through 18 cover the requirements for the fire protection infrastructure in wildland, rural, and suburban areas where there is an intended change of land use or intended land development.

10.1.2 Purpose. The purpose of Chapters 10 through 18 is to develop fire protection and emergency services infrastructure to reduce the impact of land use changes in wildland, rural, and suburban areas.

10.1.3 Application.

10.1.3.1* Chapters 10 through 18 shall apply to land development or changes in land use in wildland, rural, and suburban areas.

10.1.3.1.1 In addition to other requirements in this standard, land use changes in wildland areas shall be subject to the requirements in Chapters 24 through 26.

10.1.3.1.2 All new construction in wildland/urban interface areas shall be designed, located, and constructed to comply with Chapters 24 through 26.

10.1.3.2 If the AHJ determines that additions to existing structures or new structures have a negative impact on the fire protection of existing land use, the requirements of this standard shall be permitted to be imposed.

10.1.3.3 Equivalencies, Alternatives, and Modifications.

10.1.3.3.1 Equivalencies. Chapters 10 through 18 shall apply equivalency as defined in Section 1.4.

10.1.3.3.2 Alternatives. The specific requirements of this standard shall be permitted to be altered by the AHJ to allow

alternative methods that will secure equivalent fire safety, but in no case shall the alternative afford less fire safety, in the judgment of the AHJ, than that which would be provided by compliance with the provisions contained in this standard.

10.1.3.3.3 Modifications. The AHJ is authorized to modify any of the provisions of Chapters 10 through 18 upon application in writing by the owner, a lessee, or a duly authorized representative where there are practical difficulties in the way of carrying out the provisions of the standard, provided that the intent of the standard shall be complied with, public safety secured, and substantial justice done.

10.1.3.3.4 Conformance. Buildings with equivalencies, alternatives, or modifications approved by the AHJ shall be considered as conforming with Chapters 10 through 18.

10.1.3.3.5 Alternative Fire Protection Features.

10.1.3.3.5.1 Each application of an alternative fire protection feature shall be filed with the AHJ.

10.1.3.3.5.2 Each application for an alternative fire protection feature shall be accompanied by such evidence, letters, statements, test results, or other supporting information as required to justify the request.

10.1.3.3.5.3 The AHJ shall keep a record of the actions of such applications.

10.1.3.3.5.4 A signed copy of the AHJ's decision shall be provided for the applicant.

10.1.3.4 Requirements.

10.1.3.4.1 Chapters 10 through 18 shall be enforced by the AHJ designated by the governing body.

10.1.3.4.2* The AHJ shall have the authority to apply the requirements in Chapters 10 through 18 that are specifically addressed for buildings or other structures that are deemed to possess significant life or property loss potential.

10.1.3.4.3 If the fire department is not the AHJ, the AHJ shall consult with the fire department on all matters relative to the enforcement of Chapters 10 through 18 to ensure that the needs of the fire department are met in providing fire protection.

10.1.3.4.4 Provisions in Excess of Standard Requirements. Nothing in Chapters 10 through 18 shall be construed to prohibit a better development plan, building construction type, fire protection infrastructure, or an otherwise safer condition than that specified by the minimum requirements of Chapters 10 through 18.

10.1.3.4.5 The AHJ shall use recognized fire protection measures to meet local conditions because Chapters 10 through 18 do not set forth general fire protection features or procedures addressed in other codes or standards.

10.1.3.4.6 Conflicts.

10.1.3.4.6.1 When a requirement in a referenced document is less restrictive than requirements in Chapters 10 through 18, the requirements of Chapters 10 through 18 shall apply.

10.1.3.4.6.2 When a conflict between a general requirement and a specific requirement occurs, the specific requirement shall apply.

10.1.3.4.7* Prior to occupancy of any portion of the development, supporting infrastructure shall be installed, operational, and approved by the AHJ.

10.1.3.5 Public Notification.

10.1.3.5.1 The applicant for a land development or land use change shall provide written documentation and illustrative maps to the AHJ that specify areas that will be included in the proposed land development or land use change.

10.1.3.5.2 One or more published public announcements shall be made to publicize one or more public hearings at which the AHJ will present the proposed project, outline proposed methods to comply with Chapters 10 through 18 using best applicable data, and allow testimony by the public.

10.1.3.5.3 The applicant for a land use or land development change shall submit a written proposal to the AHJ regarding the level to which Chapters 10 through 18 shall be imposed, including justifications that demonstrate compliance, fire service impact, and responses to the public testimony.

10.1.3.5.4 The AHJ shall review the applicant's land use or land development change proposal and public testimony and render a written final determination if the proposed land use or land development change complies with Chapters 10 through 18.

10.1.3.6 Public Appeals Process. Any person shall be permitted to appeal a decision of the AHJ. A process for appeal shall be made available to the public by the appropriate administrative body of the local adopting authority.

10.1.3.6.1 Adoption Appeals.

10.1.3.6.1.1 Appeals shall be permitted, in part or whole, to the adoption of Chapters 10 through 18.

10.1.3.6.1.2 Upon appeal, the designated local government having authority shall affirm, modify, or disapprove in writing the determination of the AHJ in accordance with 10.1.3.5.3.

10.1.3.6.2 Other Appeals. Appeals of individual requirements shall be permitted when it is claimed that any one or more of the following conditions exist:

- (1) The true intent of the requirements described in Chapters 10 through 18 has been incorrectly interpreted.
- (2) The provisions of Chapters 10 through 18 do not fully apply.
- (3) A decision is unreasonable or arbitrary as it applies to alternatives or new materials.

10.1.3.7 Impact Assessment. The AHJ shall conduct an impact assessment of the proposed land development or change in land use to determine the extent of impact on fire services currently available, as specified in Chapter 12 of this standard.

10.2 General. As a minimum, the AHJ shall require preliminary, working, and as-built plans to be submitted in a timely manner.

10.2.1 Plans shall demonstrate compliance with this standard.

10.2.1.1 The AHJ shall be permitted to require the review by an approved independent third party with expertise in the matter to be reviewed at the developer's expense.

10.2.1.2 The independent reviewer shall provide an evaluation and recommend necessary changes to the proposed plan development.

10.2.1.3 The AHJ shall be authorized to require design submittals to bear the stamp of a registered design professional.

10.2.1.4 Review and approval by the AHJ shall not relieve the applicant of the responsibility of compliance with this standard.

10.3 Noncombustible Material. See 25.2.1.

Chapter 11 Means of Access (NFPA 1141)

11.1 General.

11.1.1 This section shall apply to all means of access, publicly or privately owned, whether or not they are designated as public thoroughfares.

11.1.2 Means of access shall be provided to all buildings more than 400 ft² (37 m²) in ground floor area and to public occupancies with structural components.

11.1.3 The AHJ shall have the authority to require a means of unlocking any security feature that is installed.

11.1.3.1 Any gates shall not be located closer than 30 ft (9.144 m) from an intersection and shall open in the direction of emergency vehicle travel unless other provisions are made for safe personnel operation.

11.1.3.2 The clear opening through gates shall have a usable width at least 2 ft (0.6 m) wider than the means of access it controls.

11.1.4 Number of Means of Access.

11.1.4.1* A land development shall have one or more means of access in accordance with Table 11.1.4.1(a), Table 11.1.4.1(b), or 11.1.4.2, whichever produces the greatest number.

11.1.4.2 Where residential areas are mixed with nonresidential areas, the minimum number of access routes shall be determined by calculating five parking spaces for each dwelling unit, adding that number to the parking spaces count for the nonresidential area, and using Table 11.1.4.1(b).

Table 11.1.4.1(a) Required Number of Access Routes for Residential Areas

Number of Households	Number of Access Routes
0–100	1
101–600	2
>600	3

Table 11.1.4.1(b) Required Number of Access Routes for Nonresidential Areas

Number of Parking Spaces	Number of Access Routes
0–1250	1
1251–3000	2
>3000	3

11.1.4.3 Where multiple means of access are required, one of the means of access shall be permitted to be restricted for emergency use only, when approved by the AHJ.

11.1.4.4 Where multiple means of access are required, they shall be located as remotely from each other as practical and acceptable to the AHJ.

11.2 Roadways. Roadways shall be constructed and maintained in accordance with this section.

11.2.1* The legal right-of-way for a roadway shall accommodate the width necessary for the construction, drainage, erosion control, and maintenance of the roadway, and provisions for utilities and sidewalks.

11.2.2 Roadways shall be constructed of a hard, all-weather surface designed to support all legal loads of the jurisdiction.

11.2.3 Roadways shall have a minimum clear width of 12 ft (3.7 m) for each lane of travel, excluding shoulders and parking.

11.2.3.1 Curves shall not reduce the width of the roadway.

11.2.3.2 Provisions shall be made for drainage, snowbanks, parking, utilities, and the like such that they do not impinge on the minimum clear width.

11.2.4 Where parking is permitted, such space shall be provided in accordance with Section 11.4.

11.2.5 Any roadway intersecting with another shall be sloped to prevent the accumulation of water and ice on either roadway.

11.2.6 At least 13 ft 6 in. (4.2 m) nominal vertical clearance shall be provided and maintained over the full width of the roadway.

11.2.7 Turns in roadways shall be constructed with a minimum radius of 60 ft (18.2 m) to the outside of the turn.

11.2.8 Median left-turn lanes and traffic signals shall be provided at intersections where necessary to prevent traffic from impeding fire department response time.

11.2.9 Where required by the AHJ, any traffic signal system shall have an automatic means for fire apparatus to control the signals to maintain an unimpeded right-of-way.

11.2.9.1 Sight distance shall be incorporated into the design of intersections.

11.2.10* Bridges and culverts shall be designed to accommodate a minimum of 100-year flood elevations and flows in accordance with accepted engineering practices.

11.2.11 Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ.

11.2.12 Easements shall be obtained to permit vegetation clearance alongside roads to minimize the likelihood of evacuation routes being blocked during wildfire or other natural disasters.

11.2.13* Roadways shall not be designed and constructed to include speed bumps or speed humps.

11.2.14 Alternative traffic calming devices such as chicanes and roundabouts shall be acceptable with approval by the AHJ.

11.2.15 Roadway design shall incorporate provisions for emergency pull-offs, spaced according to the AHJ.

11.2.16 Grades.

11.2.16.1 Grades shall not be more than 10 percent, except as permitted by this section.

11.2.16.2* Grades steeper than 10 percent shall be permitted by the AHJ where mitigation measures can be agreed upon by the fire department and the road engineering department, taking into consideration climate, traffic load, environmental conditions, the number of turns that would affect traffic flow, and the ability of fire apparatus to operate on steeper grades.

11.2.16.3 The angle of approach and the angle of departure shall not exceed 8 degrees at any point on the roadway or its intersection with another roadway or fire lane.

11.2.16.4 Where local conditions do not allow the maximum angles of approach and departure be limited to 8 degrees, the AHJ shall permit greater angles where local emergency apparatus can accommodate such angles.

11.2.16.5 Where grades are less than 0.5 percent, the road shall be crowned in the center to prevent pooling of water in a traveled way.

11.2.16.6 The design of grade crossings at railroad tracks shall be done by a professional engineer with expertise in railroad grade crossings.

11.2.17 Dead Ends.

11.2.17.1 Every dead-end roadway more than 300 ft (91 m) in length shall be provided at the closed end with a turnaround having no less than a 120 ft (36.6 m) outside diameter of the traveled way.

11.2.17.2* The length of any cul-de-sac shall not exceed the firefighting capability of the fire department.

11.2.17.3* A cul-de-sac exceeding 1200 ft (366 m) in length shall be provided with approved intermediate turnarounds at a maximum of 1200 ft (366 m) intervals.

11.2.18 Signage.

11.2.18.1 Addresses and Street Names.

11.2.18.1.1 Addresses shall be assigned in a logical, consistent manner based on the local addressing system.

11.2.18.1.2 Street names shall be phonetically unique.

11.2.18.2 Sign assemblies with the name of each road shall be constructed of noncombustible material and installed at each intersection.

11.2.18.3 These signs shall be installed a minimum of 7 ft (2.1 m) above the traveled way.

11.2.18.4 The letters on the signs shall be no less than 4 in. (100 mm) in height, with at least a 0.5 in. (12.7 mm) stroke, reflective and of a contrasting color to the background of the sign.

11.2.18.5 Where required by the AHJ, signs shall also include references to address numbers pertinent for that section of the road.

11.2.18.6 Where required by the AHJ, signs shall be erected at intersections indicating directions and distance to the nearest water supply.

11.2.18.7 Where the location of the nearest water supply is not obvious, signs or other directional symbols shall be erected indicating directions and distance to the nearest water supply.

11.2.18.8 The beginning of every dead-end roadway and developments with only single access shall have signage indicating that there is not a second outlet.

11.3* Fire Lanes.

11.3.1 Approval.

11.3.1.1 Fire lane plans shall be reviewed and approved by the AHJ and the fire department responsible for the protection of the property.

11.3.1.2 Changes to access points, gates, or fire lane layout shall be pre-approved by the AHJ.

11.3.2 Driveways, parking lot lanes, delivery lanes, and private roadways shall be permitted to be used as fire lanes if they meet the requirements of this section.

11.3.3 Fire lanes shall be constructed of a hard, all-weather surface designed to support any vehicle within the legal load limits of the jurisdiction.

11.3.4 The grade from a fire lane to the exterior wall of the grade level floor of a building shall not exceed 10 percent.

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

11.3.6 Fire Lane Width.

11.3.6.1 Fire lanes intended for one-way travel shall provide a minimum of 16 ft (5 m) in width of traveled way.

11.3.6.2 Fire lanes providing two-way travel shall be a minimum of 24 ft (7.3 m) in width of traveled way.

11.3.6.3 The AHJ shall be permitted to allow a reduction in fire lane width where the sole purpose of the fire lane is for emergency access and operations.

11.3.6.4 Fire lane widths shall not include shoulders, sidewalks, or drainage.

11.3.7 Extra width shall be provided where the fire department determines such width is necessary to position apparatus for operations during an incident.

11.3.8 Turns in fire lanes shall be constructed to provide sufficient width to accommodate the largest piece of fire apparatus available to be operated on the fire lane, but in no case shall the radius to the outside curb line be less than 50 ft (15.2 m).

11.3.9 All grades in fire lanes shall meet the requirements of 11.2.5.

11.3.10 At least 13 ft 6 in. (4.2 m) nominal vertical clearance shall be provided and maintained over the full width of a fire lane.

11.3.11 The angle of approach and the angle of departure shall not exceed 8 degrees at any point on the fire lane or its intersection with other roads or fire lanes.

11.3.12 When a bridge is required to be used as part of a fire apparatus access road, it shall be constructed and maintained in accordance with nationally recognized standards. [1:18.2.3.5.5.1]

11.3.12.1 The bridge shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. [1:18.2.3.5.5.2]

11.3.12.2 Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ. [1:18.2.3.5.5.3]

11.3.13 Any bridge constructed as part of a fire lane shall provide width of no less than that required for the fire lane.

11.3.14 Dead-end fire lanes that exceed 300 ft (91 m) in length shall be provided with a minimum 120 ft (36.6 m) diameter turnaround at the closed end of the fire lane.

11.3.15 The clear opening through gates in fire lanes shall be at least 2 ft (0.6 m) wider than the traveled way.

11.3.16 All gates at the entrance to fire lanes shall be located a minimum of 30 ft (9.144 m) from the roadway and shall open away from the roadway, unless other provisions are made for safe personnel operation.

11.3.16.1 The AHJ shall have the authority to require a means of unlocking any security feature that is installed.

11.3.16.2 If needed, fire department personnel shall have ready access to any manual releases that could be required if there is an interruption of utility power.

11.3.16.3 Means shall be provided to override normal operation and allow any gate to remain open until manually closed.

11.3.17 An acceptable plan for wintertime maintenance of access through any gates and along any fire lane shall be submitted to the fire department responsible for the protection of the property.

11.3.18 Approved “No Parking — Fire Lane” signs shall be posted in accordance with the instructions of the fire department having responsibility and a method of enforcing such provisions shall be provided by the local jurisdiction.

11.4 Parking Lots.

11.4.1* The minimum lengths of parking lot stalls shall be measured end to end as shown in Figure 11.4.1, and the minimum stall length and aisle widths shall be as shown in Table 11.4.1.

Table 11.4.1 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	
			ft	m	ft	m
Degrees	ft	m	ft	m	ft	m
45	27.5	8.4	16	4.9	24	7.3
60	23.7	7.2	16	4.9	24	7.3
75	20.9	6.4	23	7.0	24	7.3
90	18.5	5.6	26	7.9	26	7.9

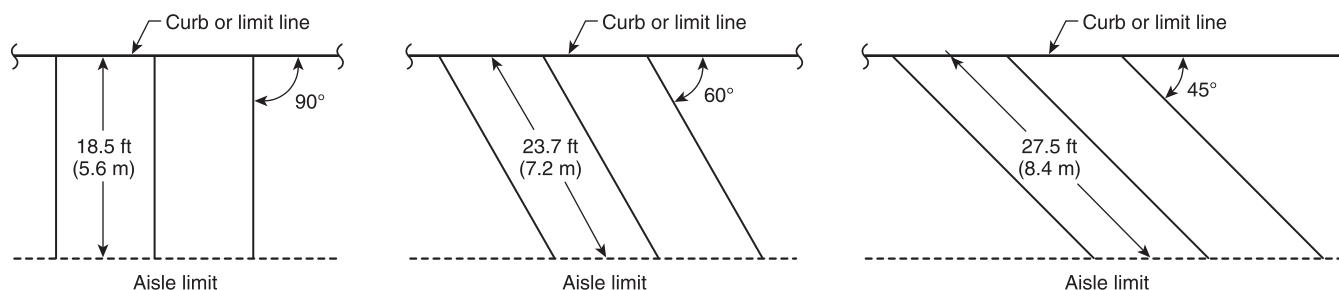


FIGURE 11.4.1 Measurements for Parking Stall Length.

11.4.2 Parking lot aisles adjacent to any building shall provide a travel lane with a minimum 24 ft (7.3 m) clear width.

11.4.3 The minimum turning radius for parking lot aisles necessary for fire department apparatus access shall be determined by the fire department having responsibility.

Chapter 12 Building Access and Separation (NFPA 1141)

12.1 General. At least one approved means of fire apparatus access shall be provided to each building in accordance with this section.

12.1.1* Approved fire apparatus access shall be provided to within 150 ft (45 m) of any point of the exterior wall of each building.

12.1.1.1 The requirements of 12.1.1 shall be permitted to be extended to 300 ft (91 m) for any building protected by an automatic sprinkler system installed and maintained according to NFPA 13 or NFPA 13R, whichever is applicable.

12.1.2 Approved fire apparatus access shall be provided to within 50 ft (15.2 m) of at least one exterior door providing access to the interior of the building.

12.1.2.1 The requirement of 12.1.2 shall not apply to one- and two-family dwellings.

12.1.3* Any building, other than a one- or two-family dwelling, exceeding two stories or 30 ft (9.144 m) in height above average adjacent ground elevation and not protected by an automatic sprinkler system installed and maintained in accordance with NFPA 13 or NFPA 13R shall have an approved means of fire apparatus access to within 30 ft (9.144 m) of all points of at least 50 percent of the exterior wall perimeter.

12.1.4* Any building exceeding three stories or 35 ft (10.7 m) in height above average adjacent ground elevation and protected by an automatic sprinkler system installed and maintained in accordance with NFPA 13 or NFPA 13R, whichever is applicable, shall have an approved means of fire apparatus access to within 30 ft (9.144 m) of an exterior wall.

12.2 Building Separation.

12.2.1 Unless governed by other locally adopted regulations, any building shall be separated from any other buildings by at least 30 ft (9.144 m) and be set back at least 30 ft (9.144 m) from a property line.

12.2.2 Any building that exceeds two stories or 30 ft (9.144 m) in height above the average adjacent ground elevation and that is not protected by an automatic sprinkler system installed and

maintained according to NFPA 13 or NFPA 13R, shall be separated from any other structure by at least 50 ft (15.2 m) and be set back at least 30 ft (9.144 m) from a property line.

Chapter 13 Premises Identification (NFPA 1141)

13.1 General. All premises having an assigned address under 11.2.18.1 shall be identified by signage bearing the assigned address.

13.1.1 Premises address signage shall meet the requirements of 13.1.2 through 13.1.6.

13.1.2 Sign assemblies shall consist of noncombustible materials.

13.1.3 Sign background shall be of a reflective material and of a contrasting color to the address numerals or letters.

13.1.4 Address numerals or letters shall be of a reflective material, of a contrasting color to the sign background, and with a height of not less than 4.0 in. (102 mm) with a 0.5 in. (13 mm) stroke.

13.1.5 Spacing between address numerals or letters shall be between 0.5 in. (13 mm) and 1.0 in. (25 mm).

13.1.6 A minimum border of 1.0 in. (25 mm) of sign background shall be maintained around the address letters or numerals.

13.2 Visibility. When address signage affixed directly to the premises is not visible from the roadway, additional signage shall be provided at the point of intersection between the premises driveway and the roadway.

13.2.1 End-of-driveway signage shall comply with all requirements for premises signage in 13.1.1 and the following:

- (1) Mounted between 4.0 ft (1.2 m) and 7.0 ft (2.1 m) above grade
- (2) Posted no further than 5.0 ft (1.5 m) from either the driveway or roadway travelled way, and on the same side of the road as the serviced driveway
- (3) Oriented perpendicular to the direction of travel on the roadway, and clearly visible and legible from both directions of travel on the roadway

13.2.2 End-of-driveway signage shall be maintained free of any visual obstructions, such as weeds, debris and snow.

13.2.3 End-of-driveway signage shall be replaced whenever damaged or when reflectivity or legibility has been degraded.

Chapter 14 Fire Protection (NFPA 1141)

14.1 Automatic Fire Protection.

14.1.1 All buildings, other than one- and two-family dwellings and apartments, that are more than two stories or more than 30 ft (9.144 m) above the adjacent ground elevation shall be fully protected with automatic sprinkler systems installed and maintained according to NFPA 13 or NFPA 13R, as permitted for the occupancy.

14.1.1.1 Where incidental portions of a building exceed two stories or 30 ft (9.144 m) in height and are not normally occupied, the provisions of 14.1.1 shall not apply.

14.1.2 All one- and two-family dwellings shall be protected with automatic sprinkler systems installed in accordance with NFPA 13D.

14.1.3 All apartment occupancies shall be protected with automatic sprinkler systems installed and maintained in accordance with NFPA 13 or NFPA 13R.

14.1.4 Any other residential building, other than one- and two-family dwellings or apartments, shall have an automatic sprinkler system installed in accordance with NFPA 13 or NFPA 13R as permitted for the occupancy.

14.1.5* Where municipal-type water systems are available, fire department connections for sprinkler systems designed in accordance with NFPA 13 or NFPA 13R shall be located not more than 100 ft (30.5 m) along an approved path from a fire hydrant and be arranged so that hose lines can be readily and conveniently attached to inlets without interference from any nearby objects, including buildings, signs, fences, posts, or other fire department connections.

14.1.6 Fire department connections shall be located to facilitate the establishment of a continuous supplemental water supply where municipal-type water systems are not available and be arranged so that hose lines can be readily and conveniently attached to inlets without interference from any nearby objects, including buildings, signs, fences, posts, or other fire department connections.

14.2 Manual Fire Protection.

14.2.1 Standpipe Systems.

14.2.1.1 General. The design and installation of standpipe systems shall be in accordance with this section and NFPA 14.

14.2.1.2 Standpipe systems shall not be required in one- and two-family dwellings.

14.2.1.3 High-rise buildings shall be protected throughout by a Class I standpipe system.

14.2.1.4 Where municipal-type water systems are provided, the requirements of 14.2.1 shall apply to all new buildings that meet any of the following conditions:

- (1) More than three stories above grade
- (2) More than 50 ft (15 m) above grade and containing intermediate stories or balconies

- (3) More than one story below grade
- (4) More than 20 ft (6.1 m) below grade

14.2.1.5 Where municipal-type water systems are not provided, the requirements of 14.2.1 shall apply to all new buildings that meet any of the following conditions:

- (1) More than two stories in height above grade
- (2) More than 40 ft (12.2 m) above grade and containing intermediate stories or balconies
- (3) More than one story below grade
- (4) More than 20 ft (6.1 m) below grade

14.2.1.6* Fire Department Connections for Standpipes.

Where municipal-type water systems are provided, fire department connections for standpipe systems shall be located not more than 100 ft (30.5 m) from the nearest fire hydrant connected to an approved water supply.

14.2.1.6.1 The location of the fire department connections shall be permitted to exceed 100 ft (30.5 m) subject to the approval of the authority having jurisdiction.

14.2.1.6.2 Where municipal-type water systems are not provided, fire department connections shall be located as required by the authority having jurisdiction to facilitate the establishment of a continuous supplemental water supply.

14.2.1.6.3 Fire department connections shall be located and arranged so that hose lines can be readily and conveniently attached to inlets without interference from any nearby objects, including buildings, signs, fences, posts, or other fire department connections.

14.2.1.6.4 Fire department connections shall be located not less than 18 in. (457 mm) nor more than 48 in. (1219 mm) above the level of the adjoining ground, sidewalk, or grade surface.

14.2.2* Fire Extinguishers. Fire extinguishers shall be provided as specified in Table 13.6.2 of NFPA 1 and installed in accordance with NFPA 10.

14.3 Automatic Fire Warning Systems.

14.3.1 Any residential buildings containing more than two living units shall have a local fire alarm system designed and installed in accordance with NFPA 72.

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

14.3.3 For nonresidential structures exceeding 1000 ft² (93 m²) gross floor area, an approved fire warning or alarm system shall be installed in accordance with NFPA 72.

14.3.3.1 For nonresidential structures exceeding 5000 ft² (465 m²) gross floor area, such systems shall retransmit an alarm to an approved central station.

14.3.3.2 Alarms or warning systems shall be tested and maintained in accordance with NFPA 72.

Chapter 15 Water Supply (NFPA 1141)

15.1 General.

15.1.1 Where water mains or fire hydrants are provided for fire protection purposes, the following shall apply:

- (1) Water mains or fire hydrants installed on public property or in a utility easement shall be installed and maintained in accordance with AWWA M31, *Distribution System Requirements for Fire Protection*.
- (2) Water mains or fire hydrants installed on nonpublic property shall be installed and maintained in accordance with NFPA 24.

15.1.2 Where there are no water mains for fire protection purposes, NFPA 1142 shall apply.

15.1.3 The number and type of fire hydrants and connections to approved water supplies shall be capable of delivering the required fire flow to one or more buildings of a development as determined by the AHJ using locally adopted codes or as specified per the following conditions:

- (1) For areas without municipal-type water systems, NFPA 1142 shall be applied.
- (2) For areas with municipal-type water systems, Annex G of NFPA 1142 or the locally adopted fire code shall be consulted for guidance.

15.1.4 Fire Hydrants.

15.1.4.1 Fire hydrants shall be marked in accordance with NFPA 291 and shall be made visible from the road by reflective marking or signage as designated by the AHJ.

15.1.4.2 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 are subject to other laws.

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

15.1.4.4 Fire hydrants shall be located within 6 ft (1.8 m) of the edge of the pavement unless the fire department determines another location is more acceptable for fire department use. Consideration shall be given to locating fire hydrants such that fire apparatus can be connected to the fire hydrant without impeding traffic flow.

15.1.4.5* 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 threads are different.

15.1.4.6 The area around fire hydrants shall remain clear of obstructions, including vegetation, signs, fences, light posts, and so forth.

15.2* Water Supply Distribution. Water sources shall be located such that the required fire flow for any building in the development can be established and maintained within 5 minutes of arrival with the fire department resources available.

15.3 Areas with Municipal-Type Water Systems.

15.3.1 For areas with municipal-type water systems, the required fire flow shall be determined as specified in

NFPA 1142, Annex G, Municipal-Type Water System, or the locally adopted fire code.

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

15.3.3 For all required fire flows other than those described in 15.3.2, the water supply system shall be capable of delivering the required fire flow for at least 1 hour at 20 psi (138 kPa) residual pressure.

15.3.4 Modifications.

15.3.4.1 Decreases. Fire flow requirements shall be permitted to be decreased by the AHJ for isolated buildings or a group of buildings in rural areas or suburban areas where the development of full fire flow requirements is impractical as determined by the AHJ.

15.3.4.2 Increases.

15.3.4.2.1 Fire flow shall be permitted to be increased by the AHJ where conditions indicate an unusual susceptibility to group fires or conflagrations.

15.3.4.2.2 An upward modification of fire flow shall not be more than twice that required for the building under consideration.

15.3.5 Fire hydrants in partially built-out or built-out areas shall be installed at a spacing not to exceed 500 ft (152 m) of vehicle travel distance from a building unless the fire department having jurisdiction determines that closer fire hydrant spacing is required.

15.3.6* In unbuilt areas, fire hydrants shall be installed at not more than 1500 ft (456 m) spacing with provisions in place to install fire hydrants to meet 15.3.5 as the area is built out.

15.3.7 The fire department shall approve the location of all fire hydrants.

15.3.8 For nonresidential buildings, a fire hydrant shall be located within 500 ft (150 m) of each point of entry.

15.3.9 In residential areas, fire hydrants shall be supplied by not less than a 6 in. (150 mm) diameter main installed on a looped system or by not less than an 8 in. (200 mm) diameter main if the system is not looped or the fire hydrant is installed on a dead-end main exceeding 300 ft (91 m) in length.

15.3.10* In nonresidential areas, detailed fire flow calculations shall be provided and used to determine necessary pipe sizing.

15.3.10.1 Future development in the area shall be considered when fire flow requirements are calculated.

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

15.4 Acceptance.

15.4.1 The contractor or installer of new water supply systems or extensions to existing water supply systems shall demonstrate by actual test that the capacity of the water supply system will meet the fire protection design requirements.

15.4.2 The AHJ shall witness the tests, approve the results, and provide a copy of test results to the fire department.

Chapter 16 Fire Protection During Construction (NFPA 1141)

16.1* General Requirements. The provisions of NFPA 241 shall apply in addition to the specific requirements of this chapter.

16.1.1 Before the infrastructure is installed, and prior to the location and construction of buildings or portions thereof, fire protection plans shall be submitted to and approved by the AHJ.

16.1.2 Prior to the delivery of combustible materials and the start of any building construction, the water supply for fire protection, whether temporary or permanent, shall be acceptable to the AHJ and shall be available.

16.1.3 Prior to the final occupancy of any building, the permanent water supply for fire protection, including fire hydrants and fire suppression systems, shall be installed, tested, and acceptable to the AHJ.

16.1.4 Fire department vehicular access to all buildings under construction shall be provided at all times.

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

16.1.5 Combustible trash and debris shall be placed completely within an approved container or removed from the site at the close of each working day.

16.1.6 Flammable or combustible liquids or gases shall be stored, handled, and used on the construction site in accordance with the applicable provisions of NFPA 30, NFPA 54, and NFPA 58.

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

16.1.8 Smoking shall be prohibited, except in those areas where approved. Where required by the AHJ, "No Smoking" signs shall be posted.

16.1.9 Cutting and welding operations shall be in accordance with NFPA 51B.

16.2 Extinguishing Equipment.

16.2.1 At least one portable fire extinguisher having a rating of at least 10-A:120-B:C shall be within a travel distance of 75 ft (23 m) or less to any point of a building under construction.

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

Chapter 17 Community Safety and Emergency Preparedness (NFPA 1141)

17.1* General.

17.1.1 The AHJ shall be responsible for the adoption and maintenance of a multi-agency operational plan for the protection of lives and property during significant emergency incidents.

17.1.2 The primary goal of the plan shall be to protect people in the affected area, including emergency personnel responding to the incident, from injury or loss of life.

17.2 Assessment of Hazards. The AHJ shall identify hazards, the likelihood of their occurrence, and the vulnerability of people, property, the environment, and the community itself to those hazards.

17.3 Operational Plan. The plan shall contain, as a minimum, command, training, community notification and involvement, public fire safety information and education, public safety and evacuation, and mutual assistance elements.

17.3.1 Command Element.

17.3.1.1 The plan shall contain a command element that clearly defines the responsibilities and authorities of all agencies and organizations that will be used in management of the incident.

17.3.1.2 Supporting resources such as social service agencies, local media, law enforcement, and so forth shall be included.

17.3.1.3 An incident management system shall be used in accordance with NFPA 1561.

17.3.2 Training Element. Training, qualification, and equipment requirements shall be prepared to ensure that all personnel and equipment assigned to an emergency incident will be able to carry out assignments in a predictable, safe, cooperative, and effective manner.

17.3.3 Community Notification and Involvement Element. Public preparation shall include the following:

- (1) The establishment of a communication system to provide rapid and accurate information to the public regarding emergency incidents that endanger their community, including detailed instructions for public notification of impending evacuation
- (2) Information regarding actions to be taken for self-protection
- (3) Information regarding appropriate assistance that can be rendered by the public to fire protection agencies in the management of emergency incidents
- (4) Security measures to protect the evacuated area

17.3.4 Public Fire Safety Information and Education Element.

17.3.4.1 The AHJ shall prepare and implement a public safety information and education program.

17.3.4.2 The program, at a minimum, shall identify and analyze the following:

- (1) Fire causes and hazards
- (2) Life and property risks from other natural and technological hazards
- (3) Prevention and safety programs
- (4) Target audiences
- (5) Activities

17.3.5 Public Safety and Evacuation Element.

17.3.5.1 A public safety and evacuation element shall provide for the safety of residents and area workers threatened by potential emergency incidents.

17.3.5.2 The public safety and evacuation element shall include the following:

- (1) Incident personnel authority and criteria for ordering evacuations or relocations
- (2) Incident personnel responsibilities in evacuations or relocations

- (3) Procedures for public notification of impending evacuations or relocations
- (4) Routes for evacuations or relocations
- (5) Shelter locations
- (6) Policy addressing the issue of persons who choose to not evacuate or relocate
- (7) Policy for allowing evacuees to return when the current emergency has passed

17.3.6 Mutual Assistance Element.

17.3.6.1 Mutual assistance (mutual aid) agreements shall be developed that detail those services and resources available to support the management of emergency incidents.

17.3.6.2 Mutual assistance agreements shall be reviewed annually.

17.3.6.3 Mutual assistance agreements shall specify the following:

- (1) Legal authorities
- (2) Command organization
- (3) Fiscal responsibilities
- (4) Operational and logistical responsibilities

17.3.7* Physical Space Element.

17.3.7.1 The plan shall contain a physical space element that defines access routes and open space(s) to support the operational plan, in accordance with the community risk assessment.

17.3.7.2 The plan shall address maintenance of the operational physical spaces, in accordance with 17.3.7.1, to ensure functionality in accordance with the operational plan.

Chapter 18 Capacity of Fire Protection Services (NFPA 1141)

18.1* Assessment.

18.1.1 An assessment shall be conducted to determine the impact of the land use change on fire protection services.

18.1.2 The assessment shall be conducted by a person with qualifications acceptable to the AHJ.

18.1.3 The assessment shall be conducted at the expense of the developer.

18.1.4 The assessment shall address the following:

- (1) *Dispatching.* Are the current system and staff able to handle the increased call volume likely to be generated by the buildout resulting from the land use change?
- (2) *Fire station locations.* In order to maintain an acceptable level of fire department and emergency response times within the response area, are current fire stations distributed and designed to service changing demands resulting from the land use changes and development?
- (3) *Fire service resources.* Are there adequate fire apparatus and staffing to meet the increased service demands likely to be generated by the buildout?
- (4) *Special services.* Will the development introduce a need for special services not currently within the capability of the fire department?

18.2* Mitigation. Where the assessment determines that the existing fire department cannot maintain its current level of service delivery while also providing services to the proposed development, the fire department and the developer shall

jointly determine how to mitigate the impact on the delivery of fire services or increase the capability of the fire department and how those services are to be provided.

Chapter 19 Risk/Hazard Assessment and Mitigation (NFPA 1143)

19.1 Administration.

19.1.1 Scope. Chapters 19 through 23 provide minimum requirements to fire protection organizations on the management of wildland fire, including prevention, mitigation, preparation, and suppression.

19.1.2* Purpose. The purpose of Chapters 19 through 23 are to specify management practices and policies necessary for a fire protection organization to develop a wildland fire management program.

19.1.3 Wildland Fire Management Policies.

19.1.3.1 The AHJ shall develop a policy for managing the organization in all aspects of wildland fire, including prevention, mitigation, preparation, and suppression.

19.1.3.1.1 As a minimum, the policy shall be established in accordance with legal mandates, organization priorities, planning procedures, incident management, personnel safety and training, and cooperative agreements.

19.1.3.1.2 Additional policy items shall be included as determined necessary by the AHJ.

19.1.3.2 Where the possibility of wildland fire constitutes a threat, the AHJ shall have a management plan to perform the activities as required by Chapters 19 through 23.

19.1.3.3 The goal shall be to reduce wildland fire loss through the establishment, maintenance, and coordination of policies and programs addressing fire prevention, risk assessment and mitigation, planning, incident management, personnel, infrastructure, training, communications, fire suppression capabilities, and safety.

19.2* General. The AHJ shall develop a written risk and hazard assessment and mitigation plan based on values at risk and consistent with firefighter and public safety.

19.3 Values at Risk.

19.3.1 The AHJ shall involve the community, landowners, industry, and other stakeholders in the identification of values to be protected within the jurisdiction.

19.3.2 The values shall include, but not be limited to, health, safety, property, and resource values, as well as the social, economic, environmental, and political concerns of the local jurisdiction.

19.4 Ignition Risk Assessment.

19.4.1 The AHJ shall evaluate the potential and historical sources of ignition.

19.4.2* The evaluation shall include both natural and human sources of ignition.

19.5* Fire Hazard Assessment.

19.5.1 The AHJ shall assess the severity of wildland fires within or threatening the jurisdiction.

19.5.2 The assessment shall consider, but not be limited to, the following:

- (1) Vegetation (fuels)
- (2) Topography
- (3) Aspect
- (4) Fire history
- (5) Historical fire weather
- (6) Fire danger rating
- (7) Potential fire behavior
- (8) Firefighting capabilities and limitations
- (9) Ingress and egress

19.5.3 In the assessment of wildland fire hazards to structures, the requirements in Chapters 24 through 26 shall apply.

19.6* Mitigation Plan.

19.6.1 Plan Development. Based on the values, ignition risk assessment, and fire hazard assessment, the AHJ shall develop a plan identifying the required mitigation activities, responsible party, priorities, and implementation schedule.

19.6.1.1* This plan shall be developed and implemented in coordination with the stakeholders.

19.6.2 Activities. The mitigation activities shall include, but not be limited to, the details outlined in 19.6.3 through 19.6.8.

19.6.3 Ignitions. The AHJ shall identify the prevention activities that reduce the occurrence of human-caused ignition.

19.6.4 Fuels Treatment.

19.6.4.1 The AHJ shall identify activities necessary to mitigate fire behavior characteristics through fuel modification.

19.6.4.2 Acceptable methods of fuel treatment include, but are not limited to, prescribed burning by qualified personnel, mowing, pruning, removing, species substitution, mulching, chemical treatments, converting to compost, and grazing.

19.6.5* Public Education. The AHJ shall appoint a qualified individual(s) whose duties shall include, but not be limited to, the following:

- (1) Scheduling and facilitating public meetings to identify values at risk, wildland fire threats, and potential mitigation strategies
- (2) Disseminating information concerning activities and their status through development and distribution of prevention information
- (3) Familiarizing press and media representatives with the threat of wildland fire and mitigation strategies

19.6.6 Structures.

19.6.6.1 Where a wildland fire ignition risk and fire hazard severity assessment indicates the need, mitigation activities for existing construction shall be consistent with Chapters 24 through 26.

19.6.6.2 The design criteria for new construction and land development in and near wildland fire threats shall be consistent with Chapters 10 through 18 and 24 through 26.

19.6.7 Infrastructure. The AHJ shall evaluate and consider the need for modification or additions to the infrastructure, including the following:

- (1) Roads — including ingress/egress
- (2) Water supply

- (3) Communications
- (4) Utility corridors
- (5) Transportation corridors
- (6) Airports

19.6.7.1 All new or modified infrastructure shall comply with the provisions of Chapters 10 through 18.

19.6.8* Special Considerations. The AHJ shall comply with civil and environmental laws in the planning and implementation of mitigation activities, including those pertaining to threatened and endangered species and historical and cultural resources.

19.7* Evaluation of Mitigation Plan. The AHJ shall, on an annual basis, review the mitigation plan to monitor progress of mitigation activities and to determine whether priorities have changed.

Chapter 20 Preparedness (NFPA 1143)

20.1 Wildland Fire Response Planning.

20.1.1 The AHJ shall evaluate the capabilities and limitations of existing firefighting resources.

20.1.2 When the situation indicates that additional resources are needed, consideration shall be given to the following:

- (1)* Mutual aid and cooperative fire protection agreements
- (2) Budget adjustments for additional personnel, apparatus, or other equipment
- (3) Government and private sector grants
- (4) Volunteer recruitment
- (5) Additional training
- (6) Improved tactics
- (7) Use of improved and innovative techniques

20.1.3 Preparedness Planning. The AHJ shall develop a written preparedness plan(s) for wildland fire management consistent with firefighter and public safety.

20.1.3.1 The plan(s) shall be based on life safety, followed by property and natural resources to be protected, as well as the political, social, economic, environmental, and other concerns of the local jurisdictions.

20.1.3.2 This plan shall, on an annual basis, be reviewed and, at a minimum, include the following:

- (1) Identification of specific wildland fire hazards, ignition risks, and potential hazard areas within the jurisdiction and other hazards that have a negative effect on wildland fire management efforts
- (2) Identification of fire protection features such as lakes, rivers, water points, natural firebreaks, potential escape routes, and other areas or features that are beneficial to wildland fire management efforts
- (3)* A list of firefighting resources, including personnel, apparatus, and equipment
- (4) A list of all cooperating agencies and other mutual aid resources and the procedures for requesting assistance from those agencies and resources
- (5) A reference to any and all existing mutual aid agreements, contracts, and other protection agreements applicable to wildland fire management efforts
- (6) A list of specific objectives relating to training, safety, response times, and staffing levels

- (7) A list of other resources that provide analyses of fire cause, identification of special fire hazards, identification of ignition risks, assessment of fire protection problems related to the wildland/urban interface and the impact on developed areas, and proposed measures to reduce fire occurrence
- (8) Mass evacuation, sheltering, and re-entry guidance in accordance with NFPA 1616

20.2* Financial Planning. The financial element of the preparedness plan shall include, at a minimum, the contractual agreements to provide for the following services:

- (1) Fuel, oil, and lubricants
- (2) Medical services, including injury reports
- (3) Catering services, food, and drinking water
- (4) Incident-specific personnel hiring and compensation
- (5) Outside services, including lodging and communications
- (6) Equipment maintenance
- (7) Specialized firefighting equipment
- (8) Purchasing practices, procedures, and agreements
- (9) Other incident support
- (10) Backfill costs and the duration for which these are to be included

20.3* Safety Requirements. The AHJ shall develop safety requirements that include 20.3.1 through 20.3.5.

20.3.1 The AHJ shall develop a safety program that includes all aspects of wildland fire incident operation, personnel welfare, and the use of personal protective clothing and equipment.

20.3.1.1 The program shall be established in accordance with jurisdictional policies and procedures and reflect the established guidance provided by NFPA 1500.

20.3.1.2* All personal protective clothing and equipment shall meet the requirements of NFPA 1977.

20.3.2 The safety officer's function shall be to carry out duties in accordance with established wildland fire incident procedures and the criteria outlined in NFPA 1521.

20.3.3 Protective measures shall be taken for apparatus and equipment used during wildland fire incidents.

20.3.4 Equipment operators shall meet the requirements of NFPA 1002 and be trained as outlined in NFPA 1451.

20.3.5 The AHJ shall follow the medical examination standards established in NFPA 1582.

20.4* Training and Qualifications.

20.4.1 All wildland firefighters shall have a working knowledge and the skills of wildland fire safety practices and procedures meeting the requirements in National Wildfire Coordinating Group (NWCG) S-130, *Firefighter Training*; S-190, *Introduction to Wildland Fire Behavior*; L-180, *Human Factors in the Wildland Fire Service*; ICS-100, *Introduction to the Incident Command System*; and IS-700, *An Introduction to the National Incident Management System*.

20.4.2* All personnel responding to wildland fire shall meet the job performance requirements of Chapters 4 through 9.

20.4.3* All members of the agencies and organizations involved in wildland fire suppression shall be trained in safety procedures around air operations.

Chapter 21 Incident Management (NFPA 1143)

21.1* Organizational Structure. In the management of wildland fire incidents, the AHJ shall utilize an incident management system (IMS) as specified in NFPA 1561.

21.1.1 At the initial stages of the incident, all command and support functions shall be the direct responsibility of the incident commander (IC).

21.1.2 As the incident grows in size and complexity, the functions shall be delegated as appropriate to qualified personnel as specified in NFPA 1026.

21.1.3 The organizational structure identified in Section 21.1 shall be compliant with the National Incident Management System (NIMS).

21.2* Functional Responsibilities. Each of the following functions as specified in 21.2.1 through 21.2.3.4 shall be addressed regardless of the size and complexity of the incident:

- (1) Incident command
- (2) Operations
- (3) Planning
- (4) Logistics
- (5) Finance

21.2.1* Incident Command Functions.

21.2.1.1* The responsibilities of incident command shall be carried out by the IC.

21.2.1.2 These responsibilities shall include, but not be limited to, the following:

- (1)* Developing the command and support organization for the incident
- (2) Establishing a command post
- (3) Developing, reviewing, revising, evaluating, approving, and distributing an incident action plan (IAP) for each operational period
- (4) Ensuring adequate safety measures are followed, using the following principles:
 - (a) Activities that present a significant risk to the safety of firefighters shall be limited to situations where there is a potential to save endangered lives.
 - (b) In those situations where improved property is threatened but lives are not at risk, threats to firefighter safety shall be minimized.
- (5) Maintaining command throughout the duration of the incident, including transfer and termination of command
- (6)* Acquiring a formal Delegation of Authority from the AHJ
- (7) Controlling access of essential and nonessential individuals to the incident scene
- (8) Maintaining awareness of situation status
- (9) Evaluating progress of the incident
- (10) Maintaining awareness of deployment of all assigned units
- (11) Maintaining personnel accountability
- (12) Requesting additional resources as needed
- (13) Notifying key people, officials, and the AHJ of incident status
- (14) Approving release of information to the public
- (15) Approving the demobilization of resources