CHAPTER 1

ADMINISTRATION

Note: Chapter 1 is entirely Seattle amendments to the *International Wildland-Urban Interface Code* and is not underlined.

PART 1—GENERAL PROVISIONS

SECTION 101
SCOPE AND APPLICATION OF CODE

[A] 101.1 Title. These regulations shall be known as the *Seattle Wildland-Urban Interface Code*, hereinafter referred to as "this code."

[A] 101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, repair, maintenance and use of any building, structure or premises within the *wildland-urban interface areas* in this jurisdiction. The wildland-urban interface designation for *wildland* areas in this jurisdiction must be determined in accordance with Chapter 3.

Buildings or conditions in existence at the time of the adoption of this code are allowed to have their use or occupancy continued, if such condition, use or occupancy was legal at the time of the adoption of this code, provided that such continued use does not constitute an *unsafe* condition that is a danger to life or property.

Buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new buildings or structures.

[A] 101.3 Purpose. The purpose of this code is to establish minimum regulations consistent with nationally recognized good practice for the safeguarding of life and for property protection. Regulations in this code are intended to mitigate the risk to life and structures from intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to mitigate structure fires from spreading to wildland fuels. The extent of this regulation is intended to be tiered commensurate with the relative level of hazard present.

The unrestricted use of property in *wildland-urban interface areas* is a potential threat to life and property from fire and resulting erosion. Safeguards to prevent the occurrence of fires and to provide adequate fire protection facilities to control the spread of fire in *wildland-urban interface areas* shall be in accordance with this code.

This code shall supplement the jurisdiction's building and fire codes, if such codes have been adopted, to provide for special regulations to mitigate the fire- and life-safety hazards of the *wildland-urban interface areas*.

[A] 101.4 Retroactivity. The provisions of the code shall apply to conditions arising after the adoption thereof, conditions not legally in existence at the adoption of this code and conditions that, as determined by the *code official*, constitute an *unsafe* condition that is a hazard to life or property.

Exception: Provisions of this code that specifically apply to existing conditions are retroactive.

[A] 101.5 Additions or alterations. Additions or alterations shall be permitted to be made to any building or structure without requiring the existing building or structure to comply with all of the requirements of this code, provided that the addition or alteration conforms to that required for a new building or structure.

Exceptions:

1. Provisions of this code that specifically apply to existing conditions are retroactive.
2. *Defensible space* per Section 603 of this code is not required for additions or alterations.

Additions or alterations shall not be made to an existing building or structure that will cause the existing building or structure to be in violation of any of the provisions of this code, or other adopted Seattle codes, nor shall such additions or alterations cause the existing building or structure to become *unsafe*. An *unsafe* condition shall be deemed to have been created if an addition or alteration, will cause the existing building or structure to become structurally *unsafe* or overloaded; will not provide adequate access, egress, will obstruct existing exits or access; will create a fire hazard; will reduce required fire resistance, or will otherwise create conditions unsafe to human life.

101.6 Internal consistency. Where in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive governs. Where there is a conflict between a general requirement and a specific requirement, the specific requirement governs.

101.7 Referenced codes and standards. The codes and standards referenced in this code are considered part of this code to the extent prescribed by each such reference. If differences occur between provisions of this code and referenced codes and

standards, the provisions of this code apply, except that nothing in this code limits the effect of any provision of the Grading Code, Stormwater Code, or Regulations for Environmentally Critical Areas.

101.8 Appendices. Provisions in the appendices of the International Building Code do not apply unless specifically adopted.

[A] 101.9 Maintenance. Buildings, structures, landscape materials, vegetation, *defensible space* or other devices or safeguards required by this code shall be maintained in conformance to the code edition under which installed. The owner or the owner's authorized agent shall be responsible for the maintenance of buildings, structures, landscape materials and vegetation.

PART 2—ADMINISTRATION

SECTION 102
ADMINISTRATION

102.1 General. The construction, alteration, movement, repair, maintenance and use of any building, structure or premises within the *wildland-urban interface areas* in this jurisdiction are subject to Chapter 1 of the Seattle Building Code and Chapter 1 of the Seattle Fire Code.

SECTION 103
PERMITS

[A] 103.1 General. Permits shall be obtained from the *code official* where required by Section 106 of the *Seattle Building Code* or Section 105 of the *Seattle Fire Code*.

SECTION 104
CONSTRUCTION DOCUMENTS

[A] 104.1 General. Plans, engineering calculations, diagrams and other data shall be submitted in not fewer than two sets, or in a digital format where allowed by the building official, with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the *code official* is authorized to require additional documents to be prepared by a registered design professional.

Exception: Submission of plans, calculations, construction inspection requirements and other data, if it is found that the nature of the work applied for is such that reviewing of plans is not necessary to obtain compliance with this code.

[A] 104.2 Information on plans and specifications. Plans and specifications shall be drawn to scale on substantial paper or cloth and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations.

[A] 104.3 Site plan. In addition to the requirements for plans in the *International Building Code*, site plans shall include topography, width and percent of grade of access roads, landscape and vegetation details, locations of structures or building envelopes, existing or proposed overhead utilities, occupancy classification of buildings, types of ignition-resistant construction of buildings, structures and their appendages, roof classification of buildings and site water supply systems. The *code official* is authorized to waive or modify the requirement for a site plan where the application for permit is for alteration or repair or where otherwise warranted.

[A] 104.4 Vegetation management plans. Where utilized by the permit applicant pursuant to Section 502, vegetation management plans shall be prepared and shall be submitted to the *code official* for review and approval as part of the plans required for a permit.

[A] 104.5 Fire protection plan. Where required by the *code official* pursuant to Section 405, a fire protection plan shall be prepared and shall be submitted to the *code official* for review and *approved* as a part of the plans required for a permit.

[A] 104.6 Other data and substantiation. Where required by the *code official*, the plans and specifications shall include classification of fuel loading, fuel model light, medium or heavy, and substantiating data to verify classification of fire-resistive vegetation.

[A] 104.7 Vicinity plan. In addition to the requirements for site plans, plans shall include details regarding the vicinity within 300 feet (91 440 mm) of lot lines, including other structures, slope, vegetation, *fuel breaks*, water supply systems and access roads.

SECTION 105
FEES

[A] 105.1 Fees. A fee for each permit and for other activities related to the enforcement of this code shall be paid as set forth in the Fee Subtitle.

CHAPTER 2

DEFINITIONS

User note:

About this chapter: *Codes, by their very nature, are technical documents. Every word, term and punctuation mark can add to or change the meaning of a technical requirement. It is necessary to maintain a consensus on the specific meaning of each term contained in the code. Chapter 2 performs this function by stating clearly what specific terms mean for the purpose of the code.*

SECTION 201
GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability. Words stated in the present tense include the future; words stated in the masculine gender include the feminine and neuter; and the singular number includes the plural and the plural the singular.

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in other International Codes, such terms shall have the meanings ascribed to them as in those codes.

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have their ordinarily accepted meanings such as the context implies.

SECTION 202
DEFINITIONS

[W] ACCESSORY STRUCTURE. A building or structure used to shelter or support any material, equipment, chattel or occupancy other than a habitable building, or a habitable building or structure that is accessory to and incidental to that of the dwelling(s) and that is located on the same lot.

[A] APPROVED. Acceptable to the *code official*.

[A] BUILDING. Any structure intended for supporting or sheltering any occupancy.

[W] ((~~[A] BUILDING OFFICIAL.~~ ~~The officer or other designated authority charged with the administration and enforcement of the *International Building Code*, or the building official's duly authorized representative.~~))

CERTIFICATE OF COMPLETION. Written documentation that the project or work for which a permit was issued has been completed in conformance with requirements of this code.

[A] CODE OFFICIAL. The official designated by the jurisdiction to interpret and enforce this code, or the *code official*'s authorized representative.

CRITICAL FIRE WEATHER. A set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire behavior make control difficult and threaten fire fighter safety.

DEFENSIBLE SPACE. An area either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

DRIVEWAY. A vehicular ingress and egress route that serves no more than two buildings or structures, not including accessory structures, or more than five dwelling units.

[BG] DWELLING. A building that contains one or two dwelling units used, intended or designed to be used, rented, leased, let or hired out to be occupied for living purposes.

[F] FIRE CHIEF. The chief officer or the chief officer's authorized representative of the fire department serving the jurisdiction.

FIRE FLOW CALCULATION AREA. The floor area, in square feet (square meters), used to determine the adequate water supply.

FIRE PROTECTION PLAN. A document prepared for a specific project or development proposed for the *wildland-urban interface area*. It describes ways to minimize and mitigate the fire problems created by the project or development, with the purpose of reducing impact on the community's fire protection delivery system.

FIRE WEATHER. Weather conditions favorable to the ignition and rapid spread of fire. In wildfires, this generally includes high temperatures combined with strong winds and low humidity. See "*Critical fire weather*."

FIRE-RESISTANCE-RATED CONSTRUCTION. The use of materials and systems in the design and construction of a building or structure to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to the *wildland-urban interface area*.

[BG] FLAME SPREAD INDEX. A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84.

[W] FUEL, HEAVY. Vegetation consisting of round wood 3 to 8 inches (76 to 203 mm) in diameter. See Fuel Models G, I, J, K and U described in ((~~Appendix D~~)) Chapter 9.

[W] FUEL, LIGHT. Vegetation consisting of herbaceous plants and round wood less than 1/4 inch (6.4 mm) in diameter. See Fuel Models A, C, E, L, N, P, R and S described in ((~~Appendix D~~)) Chapter 9.

[W] FUEL, MEDIUM. Vegetation consisting of round wood 1/4 to 3 inches (6.4 mm to 76 mm) in diameter. See Fuel Models B, D, F, H, O, Q and T described in ((~~Appendix D~~)) Chapter 9.

FUEL BREAK. An area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for fire fighting.

FUEL MODIFICATION. A method of modifying fuel load by reducing the amount of nonfire-resistive vegetation or altering the type of vegetation to reduce the fuel load.

FUEL MOSAIC. A *fuel modification* system that provides for the creation of islands and irregular boundaries to reduce the visual and ecological impact of *fuel modification*.

FUEL-LOADING. The oven-dry weight of fuels in a given area, usually expressed in pounds per acre (lb/a) (kg/ha). Fuel-loading may be referenced to fuel size or time-lag categories, and may include surface fuels or total fuels.

GREEN BELT. A *fuel break* designated for a use other than fire protection.

HAZARDOUS MATERIALS. As defined in the *International Fire Code*.

HEAVY TIMBER CONSTRUCTION. As described in the *International Building Code*.

[W] HIGH-DENSITY VEGETATED AREA. An area defined by a square determined in accordance with Section 302.3.1, with 75 percent or more vegetation.

IGNITION-RESISTANT BUILDING MATERIAL. A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with wildfire exposure of burning embers and small flames, as prescribed in Section 503.

IGNITION-RESISTANT CONSTRUCTION, CLASS 1. A schedule of additional requirements for construction in wildland-urban interface areas based on extreme fire hazard.

IGNITION-RESISTANT CONSTRUCTION, CLASS 2. A schedule of additional requirements for construction in wildland-urban interface areas based on high fire hazard.

IGNITION-RESISTANT CONSTRUCTION, CLASS 3. A schedule of additional requirements for construction in wildland-urban interface areas based on moderate fire hazard.

LOG WALL CONSTRUCTION. A type of construction in which exterior walls are constructed of solid wood members and where the smallest horizontal dimension of each solid wood member is not less than 6 inches (152 mm).

MULTILAYERED GLAZED PANELS. Window or door assemblies that consist of two or more independently glazed panels installed parallel to each other, having a sealed air gap in between, within a frame designed to fill completely the window or door opening in which the assembly is intended to be installed.

NONCOMBUSTIBLE. As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this section.
2. Material having a structural base of *noncombustible* material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame spread index obtained according to tests conducted as specified in ASTM E84 or UL 723.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classified as noncombustible that is subject to increase in combustibility or flame spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

NONCOMBUSTIBLE ROOF COVERING. A roof covering consisting of any of the following:

1. Cement shingles or sheets.
2. Exposed concrete slab roof.
3. Ferrous or copper shingles or sheets.
4. Slate shingles.
5. Clay or concrete roofing tile.
6. *Approved* roof covering of *noncombustible* material.

ROOF ASSEMBLY. A system designed to provide weather protection and resistance to design loads. The system consists of a *roof covering* and *roof deck* or a single component serving as both the roof covering and the *roof deck*. A roof assembly can include an underlayment, thermal barrier, ignition barrier, insulation or a vapor retarder.

ROOF COVERING. The covering applied to the *roof deck* for weather resistance, fire classification or appearance.

ROOF COVERING SYSTEM. See "*Roof assembly*."

ROOF DECK. The flat or sloped surface not including its supporting members or vertical supports.

SLOPE. The variation of terrain from the horizontal; the number of feet (meters) rise or fall per 100 feet (30 480 mm) measured horizontally, expressed as a percentage.

[A] STRUCTURE. That which is built or constructed.

[Z] SUBDIVISION. The division of a tract, lot or parcel of land into two or more lots, plats, sites or other divisions of land.

TREE CROWN. The primary and secondary branches growing out from the main stem, together with twigs and foliage.

UNENCLOSED ACCESSORY STRUCTURE. An accessory structure without a complete exterior wall system enclosing the area under roof or floor above.

[S] UNSAFE. Structurally unsound, provided with inadequate egress, constituting a fire hazard, or otherwise dangerous to human life, or constituting a hazard to safety, health or public welfare.

[W] WASHINGTON WILDLAND URBAN INTERFACE MAP (WA-WUI). The Washington Department of Natural Resources map designating urban areas, wildland-urban interface, wildland-urban intermix, wildlands, and long-term non-buildable areas, designated as the Washington Wildland Urban Interface as mapped for 2019 by the Washington State Department of Natural Resources—Wildfire and Forest Health Divisions under consultation from the USFS Rocky Mountain Research Station.

WILDFIRE. An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

WILDLAND. An area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities.

[W] WILDLAND-URBAN INTERFACE/INTERMIX AREA. That geographical area where structures and other human development meets or intermingles with wildland or vegetative fuels.

CHAPTER 3

WILDLAND-URBAN INTERFACE AREAS

User note:

About this chapter: *Chapter 3 provides for the fundamental aspect of applying the code—the legal declaration and establishment of wildland-urban interface areas within the adopting jurisdiction by the local legislative body. The provisions cover area analysis and declaration based on findings of fact (located in Appendix E), mapping of the area, legal recordation of the maps with the local keeper of records and the periodic review and reevaluation of the declared areas on a regular basis. If needed, revisions can be directed by the legislative body of the jurisdiction.*

[W] SECTION 301
GENERAL

~~((**301.1 Scope.** The provisions of this chapter provide methodology to establish and record wildland-urban interface areas based on the findings of fact.~~

~~**301.2 Objective.** The objective of this chapter is to provide simple baseline criteria for determining wildland-urban interface areas.~~))

301.1 Scope. Wildland-urban interface areas shall be determined using the *Washington Wildland Urban Interface Map* (WA-WUI). WA-WUI designations are permitted to be modified, upon approval of a finding of fact in accordance with Section 302.

User Note: The WA-WUI map is available at https://data-wadnr.opendata.arcgis.com/apps/wildland-urban-interface-viewing-app/explore.

301.2 Construction in wildland-urban interface or intermix areas. Where a structure is proposed to be constructed in an area designated by the WA-WUI map as wildland-urban interface or intermix, the construction shall comply with the provisions of this code.

301.3 Construction in wildlands areas. Where a structure is proposed to be constructed in an area designated by the WA-WUI map as wildlands, the applicable wildland-urban interface area designation shall be based on a finding of fact in accordance with Section 302.

[W] SECTION 302
WILDLAND-URBAN INTERFACE AREA DESIGNATIONS

~~((**302.1 Declaration.** The legislative body shall declare the *wildland-urban interface areas* within the jurisdiction. The *wildland-urban interface areas* shall be based on the findings of fact. The *wildland-urban interface area* boundary shall correspond to natural or man-made features.~~

~~**302.2 Mapping.** The *wildland-urban interface areas* shall be recorded on maps available for inspection by the public.~~

~~**302.3 Review of wildland-urban interface areas.** The *code official* shall reevaluate and recommend modification to the *wildland-urban interface areas* in accordance with Section 302.1 on a 3-year basis or more frequently as deemed necessary by the legislative body.~~))

302.1 General. Wildland-urban interface area designations are permitted to be established in accordance with this section.

302.2 Finding of fact. The applicable wildland-urban interface designation shall be based on a finding of fact. The finding of fact shall comply with the provisions of Appendix E, or is permitted to be based on the worksheet and procedures in Section 302.3.

302.3 Simplified wildland-urban interface designation worksheet. The wildland-urban interface designation is permitted to be established using the procedure outlined in Figure 302(1), using the worksheet in Figure 302(2).

302.3.1 Area to be evaluated. For the purposes of establishing structure and vegetation densities, the area covered by a square of 1,320 feet on a side (40 acres) shall be evaluated. The square area shall be located such that the site under consideration is in its center, except where the square would overlap a water body shown on the WA-WUI map with a surface area greater than 200,000 square feet, the location shall be adjusted such that no part of the square overlaps the water body.

302.3.2 Structure density category. The structure density category shall be determined by counting the number of structures within the area to be evaluated per Section 302.3.1. The structure density category shall be determined as follows:

UNINHABITED:	0 structures
VERY LOW:	1 structure
LOW:	2 to 8 structures
MEDIUM:	9 to 120 structures
HIGH:	more than 120 structures

302.3.3 Vegetation density category. Vegetation coverage within the area to be evaluated per Section 302.3.1 shall be determined in accordance with Chapter 9. Vegetation density shall be determined by dividing the vegetation coverage by 1,742,400 square feet (40 acres). Where the vegetation density is less than 50 percent, the vegetation density category for the site shall be Non-Vegetated. Where the vegetation density is 50 percent or more, the vegetation density category for the site shall be Vegetated.

302.3.4 Proximity category. The distance from the site being evaluated to a *high-density vegetated area* shall be measured from the closest edge of the site boundary to the closest edge of the nearest *high-density vegetated area*. Where the distance is less than 1.5 miles, the proximity category shall be Near. Where the distance is 1.5 miles or more, the proximity category shall be Distant.

302.3.5 WUIC applicability. The WUIC shall apply and the site shall be designated as Intermix or Interface in accordance with Section 302.3.6 under either of the following conditions:

1. The structure density category is Very Low to High, and the vegetation density category is Vegetated.
2. The structure density category is Very Low to High, and the proximity category is Near.

The WUIC shall not apply under either of the following conditions:

1. The structure density category is Uninhabited, and the site is not located within an area designated as Intermix or Interface on the WA-WUI map.
2. The structure density category is Uninhabited to High, the vegetation density category is Non-Vegetated, and the proximity category is Distant.

302.3.6 Wildland-urban interface area designation. Where required by Section 302.3.5, the site shall be designated as Intermix or Interface in accordance with Section 302.3.6.1 or 302.3.6.2.

302.3.6.1 Intermix designation. The site shall be designated as Intermix where the structure density category is Very Low to High, and the vegetation density category is Vegetated.

[S] 302.3.6.2 Interface designation. The site shall be designated as Interface where the structure density category is Very Low to High, the vegetation density category is Non-Vegetated, and the proximity category is Near.

For the area to be evaluated in Section 302.3.1:

1. Determine structure density category (uninhabited, very low, low, medium, or high).
2. Determine vegetation density category (non-vegetated or vegetated).
3. Determine proximity category (near or distant).
4. Based on structure density, vegetation density, and proximity categories, determine if compliance with this code is required (WUIC applies, WUIC does not apply).
5. Where compliance with this code is required, determine wildland-urban interface area designation (intermix or interface).

FIGURE 302(1)
OUTLINE OF SIMPLIFIED PROCEDURE FOR DETERMINING WILDLAND INTERFACE DESIGNATION

1. Determine structure density category in accordance with Section 302.3.2. Numbers in table are the number of structures within the area determined by Section 302.3.1.				
UNINHABITED	**VERY LOW**	**LOW**	**MEDIUM**	**HIGH**
0	1	2 to 8	9 to 120	More than 120
2. Determine vegetation density category within the area determined by Section 302.3.1.				
NON-VEGETATED		**VEGETATED**		
Less than 50% vegetated		50% or more vegetated		
3. Determine proximity category to the nearest *high-density vegetated area*.				
NEAR		**DISTANT**		
Less than 1.5 mi (2.414 km)		1.5 mi (2.414 km) or more		
4. Use structure density, vegetation density, and proximity categories from above to determine if WUIC applies.				
WUIC APPLIES		**WUIC DOES NOT APPLY**		
• Structure density category is Very low to High, and • Vegetation density category is Vegetated		• Structure density category is Uninhabited, and • The site is not located within an area designated as Intermix or Interface on the WA-WUI map		
• Structure density category is Very Low to High, and • Proximity category is Near		• Structure density category is Uninhabited to High, and • Vegetation density category is Non-Vegetated, and • Proximity category is Distant		
5. Where WIUC applies, the site shall be designated as Intermix or Interface as follows:				
INTERMIX		**INTERFACE**		
• Structure density category is Very Low to High, and • Vegetation density category is Vegetated		• Structure density category is Very Low to High, and • Proximity category is Near		

FIGURE 302(2)
WORKSHEET FOR SIMPLIFIED PROCEDURE FOR DETERMINING WILDLAND INTERFACE DESIGNATION

CHAPTER 4

WILDLAND-URBAN INTERFACE AREA REQUIREMENTS

User note:

About this chapter: *Chapter 4 provides requirements that apply to all occupancies in the wildland-urban interface and pertain to all of the following:*

1. *Fire service access to the property that is to be protected, including fire apparatus access roads and off-road driveways.*
2. *Premises identification.*
3. *Key boxes to provide ready access to properties secured by gated roadways or other impediments to rapid fire service access.*
4. *Fire protection water supplies, including adequate water sources, pumper apparatus drafting sites, fire hydrant systems and system reliability.*
5. *Fire department access to equipment such as fire suppression equipment and fire hydrants.*
6. *Fire protection plans.*

SECTION 401
GENERAL

401.1 Scope. *Wildland-urban interface areas* shall be provided with emergency vehicle access and water supply in accordance with this chapter.

[W] ((~~401.2 Objective.~~ ~~The objective of this chapter is to establish the minimum requirements for emergency vehicle access and water supply for buildings and structures located in the *wildland-urban interface areas*.~~

~~401.3 General safety precautions.~~ ~~General safety precautions shall be in accordance with this chapter. See also Appendix A.~~))

SECTION 402
APPLICABILITY

[W] 402.1 Subdivisions. Subdivisions shall comply with ((~~Sections 402.1.1 and 402.1.2~~)) locally adopted standards.

((~~402.1.1 Access.~~ ~~New subdivisions, as determined by this jurisdiction, shall be provided with fire apparatus access roads in accordance with the *International Fire Code* and access requirements in accordance with Section 403.~~

~~402.1.2 Water supply.~~ ~~New subdivisions as determined by this jurisdiction shall be provided with water supply in accordance with Section 404.~~))

[W] 402.2 Individual structures. Individual structures shall comply with Sections 402.2.1 and 402.2.2.

402.2.1 Access. Individual structures hereafter constructed or relocated into or within *wildland-urban interface areas* shall be provided with ((~~fire apparatus access in accordance with the *International Fire Code* and~~)) driveways in accordance with Section 403.2 and locally adopted standards. Marking of fire protection equipment shall be provided in accordance with Section 403.5 and address markers shall be provided in accordance with Section 403.6.

402.2.2 Water supply. Individual structures hereafter constructed or relocated into or within *wildland-urban interface areas* shall be provided with a conforming water supply in accordance with ((~~Section 404~~)) locally adopted standards.

((~~Exceptions:~~

1. ~~Structures constructed to meet the requirements for the class of ignition-resistant construction specified in Table 503.1 for a nonconforming water supply.~~
2. ~~Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m^2).~~

~~402.3 Existing conditions.~~ ~~Existing buildings shall be provided with address markers in accordance with Section 403.6. Existing roads and fire protection equipment shall be provided with markings in accordance with Sections 403.4 and 403.5, respectively.~~))

SECTION 403
ACCESS

403.1 Restricted access. Where emergency vehicle access is restricted because of secured access roads or driveways or where immediate access is necessary for life-saving or fire-fighting purposes, the *code official* is authorized to require a key box to be installed in an *approved* location. The key box shall be of a type *approved* by the *code official* and shall contain keys to gain necessary access as required by the *code official*.

[W] 403.2 Driveways. Driveways shall be provided where any portion of an exterior wall of the first story of a building is located more than 150 feet (45 720 mm) from a fire apparatus access road.

((**~~403.2.1 Dimensions.~~** ~~Driveways shall provide a minimum unobstructed width of 12 feet (3658 mm) and a minimum unobstructed height of 13 feet 6 inches (4115 mm).~~

~~403.2.2 Length.~~ ~~Driveways in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds. Driveways in excess of 200 feet (60 960 mm) in length and less than 20 feet (6096 mm) in width shall be provided with turnouts in addition to turnarounds.~~

~~403.2.3 Service limitations.~~ ~~A *driveway* shall not serve in excess of five *dwelling* units.~~

~~Exception:~~ ~~Where such driveways meet the requirements for fire apparatus access roads in accordance with Section 503 of the *International Fire Code*.~~))

403.2.4 Turnarounds and turnouts. ((~~*Driveway* turnarounds shall have inside turning radii of not less than 30 feet (9144 mm) and outside turning radii of not less than 45 feet (13 716 mm). Driveways that connect with a road or roads at more than one point shall be considered as having a turnaround if all changes of direction meet the radii requirements for *driveway* turnarounds.~~)) *Driveways* in excess of 300 feet in length shall be provided with turnarounds. *Driveways* in excess of 500 feet in length and less than 20 feet in width shall be provided with turnouts and turnarounds. Turnarounds and turnouts shall be designed as required by locally adopted standards.

((**~~403.2.5 Turnouts.~~** ~~*Driveway* turnouts shall be an all-weather road surface not less than 10 feet (3048 mm) wide and 30 feet (9144 mm) long. *Driveway* turnouts shall be located as required by the *code official*.~~))

403.2.6 Bridges. Vehicle load limits shall be posted at both entrances to bridges on driveways and private roads. Design loads for bridges shall be established by the *code official*.

[W] 403.3 Fire apparatus access road. Where required, fire apparatus access roads shall be ((~~all-weather roads with a minimum width of 20 feet (6096 mm) and a clear height of 13 feet 6 inches (4115 mm); shall be designed to accommodate the loads and turning radii for fire apparatus; and shall have a gradient negotiable by the specific fire apparatus normally used at that location within the jurisdiction~~)) provided and maintained as required by locally adopted street, road, and access standards. ((~~Dead-end roads in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds as *approved* by the *code official*. An all-weather road surface shall be any surface material acceptable to the *code official* that would normally allow the passage of emergency service vehicles typically used to respond to that location within the jurisdiction.~~

~~403.4 Marking of roads.~~ ~~*Approved* signs or other *approved* notices shall be provided and maintained for access roads and driveways to identify such roads and prohibit the obstruction thereof.~~

~~403.4.1 Sign construction.~~ ~~Road identification signs and supports shall be of noncombustible materials. Signs shall have minimum 4-inch-high (102 mm) reflective letters with 1/2-inch (12.7 mm) stroke on a contrasting 6-inch-high (152 mm) sign. Road identification signage shall be mounted at a height of 7 feet (2134 mm) from the road surface to the bottom of the sign.~~))

403.5 Marking of fire protection equipment. Fire protection equipment and fire hydrants shall be clearly identified in a manner *approved* by the *code official* to prevent obstruction.

403.6 Address markers. Buildings shall have a permanently posted address, which shall be placed at each *driveway* entrance and be visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

403.6.1 Signs along one-way roads. Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

403.6.2 Multiple addresses. Where multiple addresses are required at a single *driveway*, they shall be mounted on a single post, and additional signs shall be posted at locations where driveways divide.

403.6.3 Single-business sites. Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

403.7 Grade. The gradient for fire apparatus access roads and driveways shall not exceed the maximum *approved* by the *code official*.

SECTION 404
WATER SUPPLY

[W] 404.1 General. Water supply shall be provided and maintained as required by locally adopted standards. ((~~Where provided in order to qualify as a conforming water supply for the purpose of Table 503.1 or as required for new subdivisions in accordance with Section 402.1.2, an *approved* water source shall have an adequate water supply for the use of the fire protection service to protect buildings and structures from exterior fire sources or to suppress structure fires within the *wildland-urban interface area* of the jurisdiction in accordance with this section.~~

~~**Exception:** Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m^2).~~

~~**404.2 Water sources.** The point at which a water source is available for use shall be located not more than 1,000 feet (305 m) from the building and be *approved* by the *code official*. The distance shall be measured along an unobstructed line of travel.~~

~~Water sources shall comply with the following:~~

1. ~~Man-made water sources shall have a minimum usable water volume as determined by the adequate water supply needs in accordance with Section 404.5. This water source shall be equipped with an *approved* hydrant. The water level of the water source shall be maintained by rainfall, water pumped from a well, water hauled by a tanker or by seasonal high water of a stream or river. The design, construction, location, water level maintenance, access and access maintenance of man-made water sources shall be *approved* by the *code official*.~~
2. ~~Natural water sources shall have a minimum annual water level or flow sufficient to meet the adequate water supply needs in accordance with Section 404.5. This water level or flow shall not be rendered unusable because of freezing. This water source shall have an *approved* draft site with an *approved* hydrant. Adequate water flow and rights for access to the water source shall be ensured in a form acceptable to the *code official*.~~

~~**404.3 Draft sites.** *Approved* draft sites shall be provided at natural water sources intended for use as fire protection for compliance with this code. The design, construction, location, access and access maintenance of draft sites shall be *approved* by the *code official*.~~

~~**404.3.1 Access.** The draft site shall have emergency vehicle access from an access road in accordance with Section 403.~~

~~**404.3.2 Pumper access points.** The pumper access point shall be either an emergency vehicle access area alongside a conforming access road or an *approved driveway* not longer than 150 feet (45 720 mm). Pumper access points and access driveways shall be designed and constructed in accordance with all codes and ordinances enforced by this jurisdiction. Pumper access points shall not require the pumper apparatus to obstruct a road or *driveway*.~~

~~**404.4 Hydrants.** Hydrants shall be designed and constructed in accordance with nationally recognized standards. The location and access shall be *approved* by the *code official*.~~

~~**404.5 Adequate water supply.** Adequate water supply shall be determined for purposes of initial attack and flame front control as follows:~~

1. ~~One- and two-family dwellings. The required water supply for one- and two-family dwellings having a *fire flow calculation area* that does not exceed 3,600 square feet (334 m^2) shall be 1,000 gallons per minute (63.1 L/s) for a minimum duration of 30 minutes. The required water supply for one- and two-family dwellings having a *fire flow calculation area* in excess of 3,600 square feet (334 m^2) shall be 1,500 gallons per minute (95 L/s) for a minimum duration of 30 minutes.~~

   ~~**Exception:** A reduction in required flow rate of 50 percent, as *approved* by the *code official*, is allowed where the building is provided with an *approved* automatic sprinkler system.~~

2. ~~Buildings other than one- and two-family dwellings. The water supply required for buildings other than one- and two-family dwellings shall be as *approved* by the *code official* but shall be not less than 1,500 gallons per minute (95 L/s) for a duration of 2 hours.~~

   ~~**Exception:** A reduction in required flow rate of up to 75 percent, as *approved* by the *code official*, is allowed where the building is provided with an *approved* automatic sprinkler system. The resulting water supply shall not be less than 1,500 gallons per minute (94.6 L/s).~~

~~**404.6 Fire department.** The water supply required by this code shall only be approved where a fire department, rated Class 9 or better in accordance with ISO Commercial Rating Service, 1995, is available.~~

~~**404.7 Obstructions.** Access to water sources required by this code shall be unobstructed at all times. The *code official* shall not be deterred or hindered from gaining immediate access to water source equipment, fire protection equipment or hydrants.~~

~~**404.8 Identification.** Water sources, draft sites, hydrants and fire protection equipment and hydrants shall be clearly identified in a manner *approved* by the *code official* to identify location and to prevent obstruction by parking and other obstructions.~~

~~**404.9 Testing and maintenance.** Water sources, draft sites, hydrants and other fire protection equipment required by this code shall be subject to periodic tests as required by the *code official*. Such equipment installed under the provisions of this code shall be maintained in an operative condition at all times and shall be repaired or replaced where defective. Additions, repairs, alterations and servicing of such fire protection equipment and resources shall be in accordance with *approved* standards.~~

~~**404.10 Reliability.** Water supply reliability shall comply with Sections 404.10.1 through 404.10.3.~~

~~**404.10.1 Objective.** The objective of this section is to increase the reliability of water supplies by reducing the exposure of vegetative fuels to electrically powered systems.~~

~~**404.10.2 Clearance of fuel.** *Defensible space* shall be provided around water tank structures, water supply pumps and pump houses in accordance with Section 603.~~

~~**404.10.3 Standby power.** Standby power shall be provided to pumps, controllers and related electrical equipment so that stationary water supply facilities within the *wildland-urban interface area* that are dependent on electrical power can provide the required water supply. The standby power system shall be in accordance with Section 2702 of the *International Building Code*, and Section 1203 of the *International Fire Code*. The standby power source shall be capable of providing power for not less than 2 hours.~~

~~**Exceptions:**~~

1. ~~Where *approved* by the *code official*, a standby power supply is not required where the primary power service to the stationary water supply facility is underground.~~
2. ~~A standby power supply is not required where the stationary water supply facility serves not more than one single-family dwelling.~~))

SECTION 405
FIRE PROTECTION PLAN

[W] ((~~405.1 General.~~ ~~Where required by the *code official*, a *fire protection plan* shall be prepared.~~))

405.1 Fire protection plan. A fire protection plan shall be submitted to the *code official* for review and approval as part of the plans required for a permit where one of the following criteria applies:

1. The building or structure does not meet the requirements of Sections 501.4 through 501.8, or Section 504 of this code.
2. When a finding of fact complying with Chapter 3, or Appendix E of this code, is required by the applicable sections of this code, or provided to establish a wildland-urban interface designation.
3. Where required by the *code official*.

405.2 Content. The plan shall be based on a site-specific wildfire risk assessment that includes considerations of location, topography, aspect, flammable vegetation, climatic conditions and fire history. The plan shall address water supply, access, building ignition and fire-resistance factors, fire protection systems and equipment, *defensible space* and vegetation management.

405.3 Cost. The cost of *fire protection plan* preparation and review shall be the responsibility of the applicant.

405.4 Plan retention. The *fire protection plan* shall be retained by the *code official*.

CHAPTER 5
SPECIAL BUILDING CONSTRUCTION REGULATIONS

User note:

About this chapter: *Chapter 5 provides regulations that establish minimum standards for the location, design and construction of buildings and structures based on fire hazard severity in the wildland-urban interface.*

The construction provisions of Chapter 5 are intended to supplement the requirements of the International Building Code *and address mitigation of the unique hazards posed to buildings by wildfire and to reduce the hazards of building fires spreading to wildland fuels. This is accomplished by requiring ignition-resistant construction materials based on the hazard severity of the building site. Construction features regulated include underfloor areas; roof coverings; eaves and soffits; gutters and downspouts; exterior walls, doors and windows; ventilation openings and accessory structures.*

SECTION 501
GENERAL

[W] ((~~501.1 Scope.~~ ~~Buildings and structures shall be constructed in accordance with the *International Building Code* and this code.~~))

501.1 General. Buildings and structures hereafter constructed, modified, or relocated into or within the *Wildland-Urban Interface Area* shall meet the construction requirements of Sections 501.4 through 501.8.

Exceptions:

1. Buildings and structures with fire hazard severity determined in Section 502 and with ignition-resistant construction classification determined in Section 503.

((~~1~~)) 2. Accessory structures not exceeding ((~~120~~)) 200 square feet (11 m^2) in floor area and where located not less than 50 feet (15 240 mm) from buildings or structures containing habitable spaces.

((~~2~~)) 3. Agricultural buildings located not less than 50 feet (15 240 mm) from buildings or structures containing habitable spaces.

[W] ((~~501.2 Objective.~~ ~~The objective of this chapter is to establish minimum standards to locate, design and construct buildings and structures or portions thereof for the protection of life and property, to resist damage from wildfires, and to mitigate building and structure fires from spreading to wildland fuels. The minimum standards set forth in this chapter vary with the critical *fire weather*, slope and fuel type to provide increased protection, above the requirements set forth in the *International Building Code*, from the various levels of hazards.~~

~~501.3~~)) 501.2 Fire-resistance-rated construction. Where this code requires 1-hour *fire-resistance-rated construction*, the fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E119 or UL 263.

Exceptions:

1. The fire-resistance rating of building elements, components or assemblies based on the prescriptive designs prescribed in Section 721 of the *International Building Code*.
2. The fire-resistance rating of building elements, components or assemblies based on the calculation procedures in accordance with Section 722 of the *International Building Code*.

[W] 501.3 Ignition-resistant building material. Ignition-resistant building materials shall comply with any one of the following:

1. Material shall be tested on all sides with the extended ASTM E84 (UL 723) test or ASTM E2768, except panel products shall be permitted to test only the front and back faces. Panel products shall be tested with a ripped or cut longitudinal gap of 1/8 inch (3.2 mm). Materials that, when tested in accordance with the test procedures set forth in ASTM E84 or UL 723 for a test period of 30 minutes, or with ASTM E2768, comply with the following:
   1.1. Flame spread. Material shall exhibit a flame spread index not exceeding 25 and shall not show evidence of progressive combustion following the extended 30-minute test.
   1.2. Flame front. Material shall exhibit a flame front that does not progress more than 101/2 feet (3200 mm) beyond the centerline of the burner at any time during the extended 30-minute test.
   1.3. Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials shall meet the performance requirements for weathering (including

exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:

1.3.1. Method A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.

1.3.2. ASTM D7032 for wood-plastic composite materials.

1.3.3. ASTM D6662 for plastic lumber materials.

1.4. Identification. Materials shall bear identification showing the fire test results.

Exception: Materials composed of a combustible core and a *noncombustible* exterior covering made from either aluminum at a minimum 0.019-inch (0.48 mm) thickness or corrosion-resistant steel at a minimum 0.0149-inch (0.38 mm) thickness shall not be required to be tested with a ripped or cut longitudinal gap.

Noncombustible material. Material that complies with the requirements for *noncombustible* materials in Section 202.

Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.

Fire-retardant-treated wood roof coverings. Roof assemblies containing fire-retardant-treated wood shingles and shakes that comply with the requirements of Section 1505.6 of the International Building Code and classified as Class A roof assemblies as required in Section 1505.2 of the International Building Code.

[W] 501.4 Roof covering. Roofs shall have a *roof assembly* that complies with a Class A rating when tested in accordance with ASTM E108 or UL 790. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 installed over the combustible *roof deck*.

Exceptions:

1. Class A *roof assemblies* including those with coverings of brick, masonry or an exposed concrete *roof deck*.
2. Class A *roof assemblies* also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on *noncombustible* decks or ferrous, copper or metal sheets installed without a *roof deck* on *noncombustible* framing.
3. Class A *roof assemblies* include minimum 16 oz/sq. ft. (0.0416 kg/m^2) copper sheets installed over combustible *roof decks*.

501.4.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019 inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

[W][S] 501.5 Exterior walls and projections other than decks. Exterior walls and projections other than decks, of buildings, structures, or *accessory structures* shall be constructed with one of the following methods, with materials extending from the top of the foundation to the underside of the roof sheathing:

1. Materials approved for not less than one hour fire-resistance rated construction on the exterior side;
2. Approved *noncombustible* materials;
3. Heavy timber or log wall construction;
4. Fire retardant-treated wood on the exterior side. The fire retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code; or
5. Ignition-resistant materials, complying with Section 501.3 on the exterior side.

Exception: Unenclosed accessory structures attached to buildings with habitable spaces attached to the first floor of a building, when the structure is built with building materials at least 2 inches nominal depth and the area below the unenclosed accessory structure is screened with material with openings no greater than 1/4 inch maximum to prevent accumulation of combustibles and to prevent embers from coming in underneath.

[W] 501.6 Decks and appendages. The material of decks, porches, balconies and stairs shall be constructed with any of the following materials:

1. Ignition-resistant material that complies with the minimum performance requirement of Section 501.3.
2. Exterior fire retardant treated wood.
3. *Noncombustible* material.
4. Not less than 1-hour *fire-resistance-rated construction*.

5. *Heavy timber construction* consisting of the following:

5.1. Posts shall be a minimum of 6-inch by 6-inch nominal dimension;

5.2. Beams shall be a minimum 6-inch by 8-inch nominal dimension;

5.3. Joists shall be a minimum 4-inch by 8-inch nominal dimension spaced at no greater than 24 inches on center.

501.6.1 Clearance. Decks with less than 48 inches of clearance from finished grade to deck joists shall be enclosed with screen material with openings no greater than 1/4 inch maximum to prevent accumulation of combustibles and to prevent embers from coming in underneath.

501.6.2 Walking surfaces. The walking surface material of decks, porches, balconies, and stairs shall be constructed with one of the following materials:

1. Ignition-resistant material that complies with the performance requirements of Section 501.3.
2. Exterior fire-retardant-treated wood.
3. *Noncombustible* material.
4. Where the deck, porch, balcony, or stairs are constructed of heavy timber in accordance with Section 501.6, natural wood decking products shall be:
   a. Two-inch nominal lumber; or
   b. Five-fourths-inch hardwood (i.e., teak, mahogany or other approved hardwood).
5. Material that complies with the performance requirements of Section 501.6.2.1 when tested in accordance with ASTM E2632 and when attached exterior wall covering is also composed of only *noncombustible* or ignition-resistant materials.

   Exception: Wall material shall be permitted to be of any material that otherwise complies with Section 501.5 when the decking surface material complies with the performance requirements of ASTM E84 with a Class B flame spread index.

501.6.2.1 Material in Section 501.6.2, Item 5. The walking surface material shall be tested in accordance with ASTM E2632 and shall comply with the following condition of acceptance. The ASTM E2632 test shall be conducted on a minimum of three test specimens and the peak heat release rate shall be less than or equal to 25 kW/ft^2 (269 kW/m^2). If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be run. All the additional tests shall meet the condition of acceptance.

[W] 501.7 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire protection rating of not less than 20 minutes.

[W] 501.8 Vents. Attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch (6.4) mm, or shall be designed and approved to prevent flame or ember penetration into the structure.

1. Attic ventilation openings shall not be located in soffits, in eave overhands, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located not less than 10 feet (3048 mm) from lot lines.
2. Underfloor ventilation openings shall be located as close to grade as possible.

SECTION 502
FIRE HAZARD SEVERITY

[W] 502.1 General. The fire hazard severity of building sites for buildings hereafter constructed, modified or relocated into *wildland-urban interface areas* shall be established in accordance with Table 502.1. See also ((~~Appendix C~~)) Chapter 8.

TABLE 502.1
FIRE HAZARD SEVERITY

FUEL MODEL[b]	CRITICAL FIRE WEATHER FREQUENCY								
	≤ 1 Day[a]			2 to 7 days[a]			≥ 8 days[a]		
	Slope (%)			Slope (%)			Slope (%)		
	≤ 40	41-60	≥ 61	≤ 40	41-60	≥ 61	≤ 40	41-60	≥ 61
Light fuel	M	M	M	M	M	M	M	M	H
Medium fuel	M	M	H	H	H	H	E	E	E
Heavy fuel	H	H	H	H	E	E	E	E	E

E = Extreme hazard;
H = High hazard;

M = Moderate hazard.

a. Days per annum.

b. Where required by the code official, fuel classification shall be based on the historical fuel type for the area.

[W] 502.2 Fire hazard severity reduction. The fire hazard severity identified in Table 502.1 is allowed to be reduced by implementing a vegetation management plan in accordance with ((~~Appendix B~~)) Chapter 7.

SECTION 503
IGNITION-RESISTANT CONSTRUCTION AND MATERIAL

[W] 503.1 General. Buildings and structures hereafter constructed, modified or relocated into or within *wildland-urban interface areas* shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition-resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. Materials required to be ignition-resistant materials shall comply with the requirements of Section ((~~503.2~~)) 501.3.

TABLE 503.1
IGNITION-RESISTANT CONSTRUCTION[a]

DEFENSIBLE SPACE[c]	FIRE HAZARD SEVERITY					
	Moderate Hazard		High Hazard		Extreme Hazard	
	Water Supply[b]		Water Supply[b]		Water Supply[b]	
	Conforming[d]	Nonconforming[e]	Conforming[d]	Nonconforming[e]	Conforming[d]	Nonconforming[e]
Nonconforming	IR 2	IR 1	IR 1	IR 1 N.C.	IR 1 N.C.	Not Permitted
Conforming	IR 3	IR 2	IR 2	IR 1	IR 1	IR 1 N.C.
1.5 × Conforming	Not Required	IR 3	IR 3	IR 2	IR 2	IR 1

a. Access shall be in accordance with Section 403.

b. Subdivisions shall have a conforming water supply in accordance with Section 402.1.

IR 1 = Ignition-resistant construction in accordance with Section 504.

IR 2 = Ignition-resistant construction in accordance with Section 505.

IR 3 = Ignition-resistant construction in accordance with Section 506.

N.C. = Exterior walls shall have a fire-resistance rating of not less than 1 hour and the exterior surfaces of such walls shall be *noncombustible*. Usage of log wall construction is allowed.

c. Conformance based on Section 603.

d. Conformance based on Section 404.

e. A nonconforming water supply is any water system or source that does not comply with Section 404, including situations where there is no water supply for structure protection or fire suppression.

[W] ((~~503.2 Ignition-resistant building material.~~ ~~Ignition-resistant building materials shall comply with any one of the following:~~

~~1. Material shall be tested on all sides with the extended ASTM E84 (UL 723) test or ASTM E2768, except panel products shall be permitted to test only the front and back faces. Panel products shall be tested with a ripped or cut longitudinal gap of 1/8 inch (3.2 mm). Materials that, when tested in accordance with the test procedures set forth in ASTM E84 or UL 723 for a test period of 30 minutes, or with ASTM E2768, comply with the following:~~

~~1.1. Flame spread. Material shall exhibit a *flame spread index* not exceeding 25 and shall not show evidence of progressive combustion following the extended 30-minute test.~~

~~1.2. Flame front. Material shall exhibit a flame front that does not progress more than 10 1/2 feet (3200 mm) beyond the centerline of the burner at any time during the extended 30-minute test.~~

~~1.3. Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:~~

~~1.3.1. Method A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.~~

~~1.3.2. ASTM D7032 for wood-plastic composite materials.~~

~~1.3.3. ASTM D6662 for plastic lumber materials.~~

~~1.4. Identification. Materials shall bear identification showing the fire test results.~~

~~**Exception:** Materials composed of a combustible core and a noncombustible exterior covering made from either aluminum at a minimum 0.019 inch (0.48 mm) thickness or corrosion-resistant steel at a minimum 0.0149 inch (0.38 mm) thickness shall not be required to be tested with a ripped or cut longitudinal gap.~~

~~2. Noncombustible material. Material that complies with the requirements for *noncombustible* materials in Section 202.~~

~~3. Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*.~~

~~4. Fire retardant treated wood *roof coverings*. *Roof assemblies* containing fire retardant treated wood shingles and shakes that comply with the requirements of Section 1505.6 of the *International Building Code* and classified as Class A *roof assemblies* as required in Section 1505.2 of the *International Building Code*.~~))

SECTION 504
CLASS 1 IGNITION-RESISTANT CONSTRUCTION

504.1 General. Class 1 ignition-resistant construction shall be in accordance with Sections 504.2 through 504.11.

504.2 Roof assembly. Roofs shall have a *roof assembly* that complies with a Class A rating when tested in accordance with ASTM E108 or UL 790. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 installed over the combustible *roof deck*.

Exceptions:

1. Class A *roof assemblies* include those with coverings of brick, masonry or an exposed concrete *roof deck*.
2. Class A *roof assemblies* also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on *noncombustible* decks or ferrous, copper or metal sheets installed without a *roof deck* on *noncombustible* framing.
3. Class A *roof assemblies* include minimum 16 oz/sq. ft. (0.0416 kg/m^2) copper sheets installed over combustible *roof decks*.

504.2.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019 inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

504.3 Protection of eaves. Eaves and soffits shall be protected on the exposed underside by ignition-resistant materials or by materials *approved* for not less than 1-hour *fire-resistance-rated construction*, 2-inch (51 mm) nominal dimension lumber, or 1-inch (25 mm) nominal fire-retardant-treated lumber or 3/4-inch (19.1 mm) nominal fire-retardant-treated plywood, identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*. Fascias are required and shall be protected on the backside by ignition-resistant materials or by materials *approved* for not less than 1-hour *fire-resistance-rated construction* or 2-inch (51 mm) nominal dimension lumber.

504.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

[W] 504.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Materials *approved* for not less than 1-hour *fire-resistance-rated construction* on the exterior side.
2. *Approved noncombustible* materials.
3. Heavy timber or *log wall construction*.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.
5. Ignition-resistant materials complying with Section ((~~503.2~~)) 501.3 on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

[W] 504.7 Appendages and projections. ((~~*Unenclosed accessory*~~)) *Accessory structures* attached to buildings with habitable spaces and projections other than decks, porches, balconies, or stairs, ((~~such as decks,~~)) shall be not less than 1-hour fire- resistance-rated construction, *heavy timber construction* or constructed of one of the following:

1. *Approved noncombustible* materials.
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*.
3. Ignition-resistant building materials in accordance with Section ((~~503.2~~)) 501.3.

((**~~Exception~~**: ~~Coated materials shall not be used as the walking surface of decks.~~))

504.7.1 Underfloor areas. Where the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.

[W] 504.8 Decks and appendages. The material of decks, porches, balconies and stairs shall be constructed with any of the following materials:

1. Ignition-resistant material that complies with the minimum performance requirement of Section 503.2.
2. Exterior fire retardant treated wood.
3. *Noncombustible* material.
4. Not less than 1-hour *fire-resistance-rated construction*.
5. *Heavy timber construction* consisting of the following:
   - 5.1. Posts shall be a minimum of 6 inches by 6 inches nominal dimension;
   - 5.2. Beams shall be a minimum 6 inches by 8 inches nominal dimension;
   - 5.3. Joists shall be a minimum 4 inches by 8 inches nominal dimension spaced at no greater than 24 inches on center;
   - 5.4. Natural wood decking products shall be:
     a. Two-inch nominal lumber; or
     b. Five-fourths-inch hardwood (i.e., teak, mahogany or other approved hardwood).

504.8.1 Clearance. Decks with less than 48 inches of clearance from finished grade to deck joists shall be enclosed with screen material with openings no greater than 1/4 inch maximum to prevent accumulation of combustibles and to prevent embers from coming in underneath.

504.8.2 Walking surfaces. The walking surface material of decks, porches, balconies, and stairs shall be constructed with one of the following materials:

1. Ignition-resistant material that complies with the performance requirements of Section 503.2.
2. Exterior fire-retardant-treated wood.
3. *Noncombustible* material.
4. Where the deck, porch, balcony, or stairs are constructed of heavy timber in accordance with Section 501.6, natural wood decking products shall be:
   a. Two-inch nominal lumber; or
   b. Five-fourths-inch hardwood (i.e., teak, mahogany or other approved hardwood).
5. Material that complies with the performance requirements of Section 504.8.2.1 when tested in accordance with ASTM E2632 and when attached exterior wall covering is also composed of only *noncombustible* or ignition-resistant materials.

Exception: Wall material shall be permitted to be of any material that otherwise complies with Section 501.5 when the decking surface material complies with the performance requirements of ASTM E84 with a Class B flame spread index.

504.8.2.1 Material in Section 504.8.2, Item 5. The walking surface material shall be tested in accordance with ASTM E2632 and shall comply with the following condition of acceptance. The ASTM E2632 test shall be conducted on a minimum of three test specimens and the peak heat release rate shall be less than or equal to 25 kW/ft^2 (269 kW/m^2). If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be run. All the additional tests shall meet the condition of acceptance.

((**~~504.8~~**)) **504.9 Exterior glazing.** Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, *multilayered glazed panels*, glass block or have a fire protection rating of not less than 20 minutes.

((~~504.9~~)) 504.10 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid core wood not less than 1-3/4 inches thick (44 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8.

Exception: Vehicle access doors.

((~~504.10~~)) 504.11 Vents. Attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with *noncombustible* corrosion-resistant mesh with openings not to exceed 1/4 inch (6.4 mm), or shall be designed and *approved* to prevent flame or ember penetration into the structure.

((~~504.10.1~~)) 504.11.1 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located not less than 10 feet (3048 mm) from lot lines. Underfloor ventilation openings shall be located as close to grade as practical.

((~~504.11~~)) 504.12 Detached accessory structures. Detached accessory structures located less than 50 feet (15 240 mm) from a building containing habitable space shall have exterior walls constructed with materials *approved* for not less than 1-hour *fire-resistance-rated construction*, heavy timber, *log wall construction*, or constructed with *approved noncombustible* materials or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

((~~504.11.1~~)) 504.12.1 Underfloor areas. Where the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5 or underfloor protection in accordance with Section 504.6.

Exception: The enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

SECTION 505
CLASS 2 IGNITION-RESISTANT CONSTRUCTION

505.1 General. Class 2 ignition-resistant construction shall be in accordance with Sections 505.2 through 505.11.

505.2 Roof assembly. Roofs shall have a *roof assembly* that complies with not less than a Class A rating when tested in accordance with ASTM E108 or UL 790, or an *approved noncombustible roof covering*. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of cap sheet complying with ASTM D3909 installed over the combustible *roof deck*.

505.2.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

505.3 Protection of eaves. Combustible eaves, fascias and soffits shall be enclosed with solid materials with a minimum thickness of 3/4 inch (19 mm). Exposed rafter tails shall not be permitted unless constructed of heavy timber materials.

505.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

505.5 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Materials *approved* for not less than 1-hour *fire-resistance-rated construction* on the exterior side.
2. *Approved noncombustible* materials.
3. Heavy timber or *log wall construction*.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

505.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground, with exterior walls in accordance with Section 505.5.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or

heavy timber construction or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

[W] 505.7 Appendages and projections. ((~~*Unenclosed accessory*~~)) *Accessory structures* attached to buildings with habitable spaces and projections, ((~~such as decks,~~)) other than decks, porches, balconies, or stairs, shall be not less than 1-hour *fire-resistance-rated construction*, *heavy timber construction* or constructed of one of the following:

1. *Approved noncombustible* materials.
2. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*.
3. Ignition-resistant building materials in accordance with Section 503.2.

((~~**Exception:** Coated materials shall not be used as the walking surface of decks.~~))

505.7.1 Underfloor areas. Where the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5.

[W] 505.8 Decks and appendages. The material of decks, porches, balconies and stairs shall be constructed with any of the following materials:

1. Ignition-resistant material that complies with the minimum performance requirement of Section 503.2.
2. Exterior fire retardant treated wood.
3. *Noncombustible* material.
4. Not less than 1-hour *fire-resistance-rated construction*.
5. *Heavy timber construction* consisting of the following:
   - 5.1. Posts shall be a minimum of 6 inches by 6 inches nominal dimension;
   - 5.2. Beams shall be a minimum 6 inches by 8 inches nominal dimension;
   - 5.3. Joists shall be a minimum 4 inches by 8 inches nominal dimension spaced at no greater than 24 inches on center.

505.8.1 Clearance. Decks with less than 48 inches of clearance from finished grade to deck joists shall be enclosed with screen material with openings no greater than 1/4 inch maximum to prevent accumulation of combustibles and to prevent embers from coming in underneath.

505.8.2 Walking surfaces. The walking surface material of decks, porches, balconies, and stairs shall be constructed with one of the following materials:

1. Ignition-resistant material that complies with the performance requirements of Section 503.2.
2. Exterior fire-retardant-treated wood.
3. *Noncombustible* material.
4. Where the deck, porch, balcony, or stairs are constructed of heavy timber in accordance with Section 501.6, natural wood decking products shall be:
   a. Two-inch nominal lumber; or
   b. Five-fourths-inch hardwood (i.e., teak, mahogany or other approved hardwood).
5. Material that complies with the performance requirements of Section 505.8.1.1 when tested in accordance with ASTM E2632 and when attached exterior wall covering is also composed of only *noncombustible* or ignition-resistant materials.

   Exception: Wall material shall be permitted to be of any material that otherwise complies with Section 501.5 when the decking surface material complies with the performance requirements of ASTM E84 with a Class B flame spread index.

505.8.2.1 Material in Section 505.8.1, Item 5. The walking surface material shall be tested in accordance with ASTM E2632 and shall comply with the following condition of acceptance. The ASTM E2632 test shall be conducted on a minimum of three test specimens and the peak heat release rate shall be less than or equal to 25 kW/ft^2 (269 kW/m^2). If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be run. All the additional tests shall meet the condition of acceptance.

((~~505.8~~)) 505.9 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be tempered glass, *multilayered glazed panels*, glass block or have a fire protection rating of not less than 20 minutes.

((~~505.9~~)) 505.10 Exterior doors. Exterior doors shall be *approved non-combustible* construction, solid core wood not less than 1-3/4 inches thick (45 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 505.8.

Exception: Vehicle access doors.

((~~505.10~~)) 505.11 Vents. Attic ventilation openings, foundation or underfloor vents or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with *noncombustible* corrosion-resistant mesh with openings not to exceed 1/4 inch (6.4 mm) or shall be designed and *approved* to prevent flame or ember penetration into the structure.

((~~505.10.1~~)) 505.11.1 Vent locations. Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located not less than 10 feet (3048 mm) from lot lines. Underfloor ventilation openings shall be located as close to grade as practical.

((~~505.11~~)) 505.12 Detached accessory structures. Detached accessory structures located less than 50 feet (15 240 mm) from a building containing habitable space shall have exterior walls constructed with materials *approved* for not less than 1-hour *fire-resistance-rated construction*, heavy timber, *log wall construction*, or constructed with *approved noncombustible* materials or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

((~~505.11.1~~)) 505.12.1 Underfloor areas. Where the detached *accessory structure* is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5 or underfloor protection in accordance with Section 505.6.

Exception: The enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or heavy-timber construction or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code*.

SECTION 506
CLASS 3 IGNITION-RESISTANT CONSTRUCTION

506.1 General. Class 3 ignition-resistant construction shall be in accordance with Sections 506.2 through 506.4.

506.2 Roof assembly. Roofs shall have a *roof assembly* that complies with not less than a Class B rating when tested in accordance with ASTM E108 or UL 790 or an *approved noncombustible roof covering*. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be firestopped to preclude entry of flames or embers, or have one layer of cap sheet complying with ASTM D3909 installed over the combustible *roof deck*.

506.2.1 Roof valleys. Where provided, valley flashings shall be not less than 0.019-inch (0.44 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

506.3 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction*, fire-retardant-treated wood, or *heavy timber construction*. Fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the *International Building Code.*

506.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* material. Gutters shall be provided with an *approved* means to prevent the accumulation of leaves and debris in the gutter.

SECTION 507
REPLACEMENT OR REPAIR OF ROOF COVERINGS

[W] 507.1 General. The *roof covering* on buildings or structures in existence prior to the adoption of this code that are replaced or have ((~~25~~)) 50 percent or more replaced in a 12-month period shall be replaced with a *roof covering* required ((~~for new construction~~)) by Section 501.4 or based on the type of ignition-resistant construction ((~~specified in accordance with Section 503~~)) as determined by Section 501.1 Exception 1.

CHAPTER 6

FIRE PROTECTION REQUIREMENTS

User note:

About this chapter: *Chapter 6 establishes minimum fire protection requirements to mitigate the hazards to life and property from fire in the wildland-urban interface. The chapter includes both design-oriented and prescriptive mitigation strategies to reduce the hazards of fire originating within a structure spreading to wildland and fire originating in wildland spreading to structures.*

Especially targeted for a systems-approach to fire protection are those new buildings that are deemed to be particularly hazardous under Chapter 5; these buildings are required to be sprinklered. Other hazard mitigation strategies include establishing around structures defensible space zones wherein combustible vegetation and trees are regulated and kept away from buildings and trees are located 10 feet crown-to-crown away from each other. Additional hazards that are dealt with in Chapter 6 include spark arrestors on chimneys and regulated storage of combustible materials, firewood and LP-gas.

SECTION 601
GENERAL

601.1 Scope. The provisions of this chapter establish general requirements for new and existing buildings, structures and premises located within *wildland-urban interface areas.*

601.2 Objective. The objective of this chapter is to establish minimum requirements to mitigate the risk to life and property from wildland fire exposures, exposures from adjacent structures and to prevent structure fires spreading to wildland fuels.

SECTION 602
AUTOMATIC SPRINKLER SYSTEMS

[W] 602.1 General. An *approved* automatic sprinkler system shall be installed ((~~in all occupancies in new buildings required to meet the requirements for Class 1 ignition-resistant construction in Chapter 5~~)) when required by the authority having jurisdiction. The installation of the automatic sprinkler systems shall be in accordance with nationally recognized standards.

SECTION 603
DEFENSIBLE SPACE

603.1 Objective. Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a *defensible space*.

[S] 603.2 Fuel modification. ((~~Buildings or structures, constructed in compliance with the conforming *defensible space* category of Table 503.1, shall comply with the *fuel modification* distances contained in Table 603.2. For all other purposes the *fuel modification* distance shall be not less than 30 feet (9144 mm) or to the lot line, whichever is less. Distances specified in Table 603.2 shall be measured on a horizontal plane from the perimeter or projection of the building or structure as shown in Figure 603.2. Distances specified in Table 603.2 are allowed to be increased by the *code official* because of a site-specific analysis based on local conditions and the *fire protection plan*.~~))

Fuel modification distance for new or relocated *buildings* or *structures* constructed within a *Wildland-Urban Interface Area* shall be one of the following:

1. *Buildings* or *structures* meeting the requirements of Sections 501.4 through 501.8 of this code shall have a *fuel modification* distance of not less than 30 feet or to the lot line, whichever is less.
2. *Buildings* or *structures* constructed in compliance with the conforming *defensible space* category of Table 503.1 shall comply with the *fuel modification* distances contained in Table 603.2. *Buildings* or *structures* constructed in compliance with the nonconforming *defensible space* category of Table 503.1 shall have a *fuel modification* distance of not less than 30 feet or to the lot line, whichever is less.
3. *Accessory structures* with no more than 200 square feet of floor area do not require *defensible space*.

Fuel modification distances shall be measured on a horizontal plane from the perimeter or projection of the *building* or *structure* as shown in Figure 603.2. Distances are allowed to be increased by the code official because of a site-specific analysis based on local conditions and the fire protection plan.

((~~APPENDIX B~~)) CHAPTER 7

VEGETATION MANAGEMENT PLAN

((~~*The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.*~~))

User note:

About this **((~~*appendix*~~))** ***chapter:*** ((~~*Appendix B, while not part of the code, can become part of the code when specifically included in the adopting ordinance. Its*~~)) *Chapter 7's purpose is to provide criteria for submitting vegetation management plans, specifying their content and establishing a criterion for considering vegetation management as being a fuel modification.*

SECTION ((~~B104~~)) 701
GENERAL

[W] ((~~B101.1~~)) 701.1 Scope. ((~~Vegetation management plans~~)) A vegetation management plan shall be submitted to the *code official* for review and approval as part of the plans required for a permit ((~~.~~)) where one of the following criteria applies:

1. The building or structure does not meet the requirements of Sections 501.4 through 501.8, or Section 504 of this code.
2. When a finding of fact complying with Chapter 3, or Appendix E of this code, is required by the applicable sections of this code, or provided to establish a wildland-urban interface designation.
3. Where required by the code official.

((~~B101.2~~)) 701.2 Plan content. Vegetation management plans shall describe all actions that will be taken to prevent a fire from being carried toward or away from the building. A vegetation management plan shall include the following information:

1. A copy of the site plan.
2. Methods and timetables for controlling, changing or modifying areas on the property. Elements of the plan shall include removal of slash, snags, vegetation that may grow into overhead electrical lines, other ground fuels, ladder fuels and dead trees, and the thinning of live trees.
3. A plan for maintaining the proposed fuel-reduction measures.

((~~B101.3~~)) 701.3 Fuel modification. To be considered a *fuel modification* for purposes of this code, continuous maintenance of the clearance is required.

((~~APPENDIX C~~)) CHAPTER 8

FIRE HAZARD SEVERITY FORM

((~~*The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.*~~))

User note:

About this **((~~appendix~~))** ***chapter:*** ((~~*Appendix C, while not part of the code, can become part of the code (replacing Table 502.1) when specifically included in the adopting ordinance.*~~)) *Its purpose is to provide an alternative methodology to using Table 502.1 for analyzing the fire hazard severity of building sites using a pre-assigned value/scoring system for each feature that impacts the hazard level of a building site. Included in the evaluation are site access, types and management of vegetation, percentage of defensible space on the site, site topography, class of roofing and other construction materials used on the building (existing or to be constructed on the site), fire protection water supply, and whether utilities are installed above or below ground.*

SECTION ((~~C101~~)) 801
FIRE HAZARD SEVERITY FORM

[W] ((~~C101.1 Fire hazard severity form.~~ ~~Where adopted, Table C101.1 is permitted to be used as an alternative to Table 502.1 for analyzing the fire hazard severity of building sites.~~))

801.1 Fire hazard severity form. A fire hazard severity form shall be submitted to the code official for review and approval as part of the plans required for a permit where one of the following criteria applies:

1. The building or structure does not meet the requirements of Sections 501.4 through 501.8, or Section 504 of this code.
2. When a finding of fact complying with Chapter 3, or Appendix E of this code, is required by the applicable sections of this code, or provided to establish a wildland-urban interface designation.
3. Where required by the code official.

Table 801.1 is permitted to be used as an alternative to Table 502.1 for analyzing the fire hazard severity of building sites.

TABLE ((~~C401.1~~)) 801.1
FIRE HAZARD SEVERITY FORM

A. Subdivision Design Points	
1. Ingress/Egress	
Two or more primary roads	1___
One road	3___
One-way road in, one-way road out	5___
2. Width of Primary Road	
20 feet (6096 mm) or more	1___
Less than 20 feet (6096 mm)	3___
3. Accessibility	
Road grade 5% or less	1___
Road grade more than 5%	3___
4. Secondary Road Terminus	
Loop roads, cul-de-sacs with an outside turning radius of 45 feet (13 716 mm) or greater	1___
Cul-de-sac turnaround	2___
Dead-end roads 200 feet (60 960 mm) or less in length	3___
Dead-end roads greater than 200 feet (60 960 mm) in length	5___
5. Street Signs	
Present	1___
Not present	3___
B. Vegetation (IWUIC Definitions)	
1. Fuel Types	
Light	1___
Medium	5___

TABLE ((~~C101.1~~)) 801.1—continued
FIRE HAZARD SEVERITY FORM

Heavy	10___
2. Defensible Space	
70% or more of site	1___
30% or more, but less than 70% of site	10___
Less than 30% of site	20___
C. Topography	
8% or less	1___
More than 8%, but less than 20%	4___
20% or more, but less than 30%	7___
30% or more	10___
D. Roofing Material	
Class A Fire Rated	1___
Class B Fire Rated	5___
Class C Fire Rated	10___
Nonrated	20___
E. Fire Protection—Water Source	
500 GPM (1892.5 L/min) hydrant within 1,000 feet (304.8 m)	1___
Hydrant farther than 1,000 feet (304.8 m) or draft site	2___
Water source 20 min. or less, round trip	5___
Water source farther than 20 min., and 45 min. or less, round trip	7___
Water source farther than 45 min., round trip	10___
F. Existing Building Construction Materials	
Noncombustible siding/deck	1___
Noncombustible siding/combustible deck	5___
Combustible siding and deck	10___
G. Utilities (gas and/or electric)	
All underground utilities	1___
One underground, one above ground	3___
All above ground	5___
Total for Subdivision	
Moderate Hazard	40–59
High Hazard	60–74
Extreme Hazard	75+

((~~APPENDIX D~~)) CHAPTER 9

FIRE DANGER RATING SYSTEM

This ((~~appendix~~)) chapter is an excerpt from the National Fire Danger Rating System (NFDRS), 1978, United States Department of Agriculture Forest Service, General Technical Report INT-39, modified only to match I-Codes formatting with section or table numbers and titles, and is for information purposes and is not intended for adoption.

User note:

About this ((~~appendix~~)) chapter: *The fuel models included in ((~~Appendix D~~)) Chapter 9 are only general descriptions because they represent all wildfire fuels from Florida to Alaska and from the East Coast to California.*

The National Fire Danger Rating System (NFDRS) is a set of computer programs and algorithms that allows land management agencies to estimate today's or tomorrow's fire danger for a given rating area. NFDRS characterizes fire danger by evaluating the approximate upper limit of fire behavior in a fire danger rating area during a 24-hour period based on fuels, topography and weather, or what is commonly called the fire triangle. Fire danger ratings are guides for initiating presuppression activities and selecting the appropriate level of initial response to a reported wildfire in lieu of detailed, site- and time-specific information.

Predicting the potential behavior and effects of wildland fire are essential tasks in fire management. Surface fire behavior and fire effects models and prediction systems are driven in part by fuelbed inputs such as load, bulk density, fuel particle size, heat content and moisture content. To facilitate use in models and systems, fuelbed inputs have been formulated into fuel models. A fuel model is a set of fuelbed inputs needed by a particular fire behavior or fire effects model. Different kinds of fuel models are used in fire spread models in a variety of fire behavior modeling systems. The fuel models in this appendix correlate with the light, medium and heavy fuel definitions found in Chapter 2 of the code.

SECTION ((~~D101~~)) 901
FUEL MODELS

((~~D101.1~~)) 901.1 General. The Fuel Model Key is provided in ((~~Table D101.1~~)) 901.1. Fuel Models are described in Sections ((~~D101.1.1~~)) 901.1.1 through ((~~D101.1.20~~)) 901.1.20.

TABLE ((~~D101.1~~)) 901.1
FUEL MODEL KEY

I. Mosses, lichens and low shrubs predominate ground fuels.

A. An overstory of conifers occupies more than one-third of the site: MODEL Q

B. There is no overstory, or it occupies less than one-third of the site (tundra): MODEL S

II. Marsh grasses and/or reeds predominate: MODEL N

III. Grasses and/or forbs predominate.

A. There is an open overstory of conifer and/or hardwood trees: MODEL C

B. There is no overstory.

1. Woody shrubs occupy more than one-third, but less than two-thirds of the site: MODEL T
2. Woody shrubs occupy less than one-third of the site.
    a. The grasses and forbs are primarily annuals: MODEL A
    b. The grasses and forbs are primarily perennials: MODEL L

IV. Brush, shrubs, tree reproduction or dwarf tree species predominate.

A. Average height of woody plants is 6 feet or greater.

1. Woody plants occupy two-thirds or more of the site.
    a. One-fourth or more of the woody foliage is dead.
        (1) Mixed California chaparral: MODEL B
        (2) Other types of brush: MODEL F
    b. Up to one-fourth of the woody foliage is dead: MODEL Q
    c. Little dead foliage: MODEL O
2. Woody plants occupy less than two-thirds of the site: MODEL F

TABLE ((~~D101.1~~)) 901.1—continued
FUEL MODEL KEY

IV. Brush, shrubs, tree reproduction or dwarf tree species predominate.

B. Average height of woody plants is less than 6 feet.

1. Woody plants occupy two-thirds or more of the site.
    a. Western United States: MODEL F
    b. Eastern United States: MODEL O
2. Woody plants occupy less than two-thirds but more than one-third of the site.
    a. Western United States: MODEL T
    b. Eastern United States: MODEL D
3. Woody plants occupy less than one-third of the site.
    a. The grasses and forbs are primarily annuals: MODEL A
    b. The grasses and forbs are primarily perennials: MODEL L

V. Trees predominate.

A. Deciduous broadleaf species predominate.

1. The area has been thinned or partially cut, leaving slash as the major fuel component: MODEL K
2. The area has not been thinned or partially cut.
    a. The overstory is dormant; the leaves have fallen: MODEL E
    b. The overstory is in full leaf: MODEL R

B. Conifer species predominate.

1. Lichens, mosses, and low shrubs dominate as understory fuels: MODEL Q
2. Grasses and forbs are the primary ground fuels: MODEL C
3. Woody shrubs and/or reproduction dominate as understory fuels.
    a. The understory burns readily.
        (1) Western United States: MODEL T
        (2) Eastern United States:
            (a) The understory is more than 6 feet tall: MODEL O
            (b) The understory is less than 6 feet tall: MODEL D
    b. The understory seldom burns: MODEL H
4. Duff and litter, branchwood, and tree boles are the primary ground fuels.
    a. The overstory is overmature and decadent; there is a heavy accumulation of dead tree debris: MODEL G
    b. The overstory is not decadent; there is only a nominal accumulation of debris.
        (1) The needles are 2 inches (51 mm) or more in length (most pines).
            (a) Eastern United States: MODEL P
            (b) Western United States: MODEL U
        (2) The needles are less than 2 inches (51 mm) long: MODEL H

VI. Slash is the predominant fuel.

A. The foliage is still attached; there has been little settling.

1. The loading is 25 tons/acre (56.1 tons/ha) or greater: MODEL I
2. The loading is less than 25 tons/acre (56.1 tons/ha) but more than 15 tons/acre (33.7 tons/ha): MODEL J
3. The loading is less than 15 tons/acre (33.7 tons/ha): MODEL K

B. Settling is evident; the foliage is falling off; grasses, forbs, and shrubs are invading the area.

1. The loading is 25 tons/acre (56.1 tons/ha) or greater: MODEL J
2. The loading is less than 25 tons/acre (56.1 tons/ha): MODEL K

((~~D101.1.1~~)) 901.1.1 FUEL MODEL A. This fuel model represents western grasslands vegetated by annual grasses and forbs. Brush or trees may be present but are very sparse, occupying less than a third of the area. Examples of types where Fuel Model A should be used are cheatgrass and medusahead. Open pinyon-juniper, sagebrush-grass, and desert shrub

associations may appropriately be assigned this fuel model if the woody plants meet the density criteria. The quantity and continuity of the ground fuels vary greatly with rainfall from year to year.

((~~D101.1.2~~)) 901.1.2 FUEL MODEL B. Mature, dense fields of brush 6 feet (1829 mm) or more in height are represented by this fuel model. One-fourth or more of the aerial fuel in such stands is dead. Foliage burns readily. Model B fuels are potentially very dangerous, fostering intense, fast-spreading fires. This model is for California mixed chaparral generally 30 years or older. The F model is more appropriate for pure chamise stands. The B model may also be used for the New Jersey pine barrens.

((~~D101.1.3~~)) 901.1.3 FUEL MODEL C. Open pine stands typify Model C fuels. Perennial grasses and forbs are the primary ground fuel but there is enough needle litter and branchwood present to contribute significantly to the fuel loading. Some brush and shrubs may be present but they are of little consequence. Situations covered by Fuel Model C are open, longleaf, slash, ponderosa, Jeffrey, and sugar pine stands. Some pinyon-juniper stands may qualify.

((~~D101.1.4~~)) 901.1.4 FUEL MODEL D. This fuel model is specifically for the palmetto-gallberry understory-pine overstory association of the southeast coastal plains. It can also be used for the so-called "low pocosins" where Fuel Model O might be too severe. This model should only be used in the Southeast, because of a high moisture of extinction.

((~~D101.1.5~~)) 901.1.5 FUEL MODEL E. Use this model after leaf fall for hardwood and mixed hardwood-conifer types where the hardwoods dominate. The fuel is primarily hardwood leaf litter. The oat-hickory types are best represented by Fuel Model E, but E is an acceptable choice for northern hardwoods and mixed forests of the Southeast. In high winds, the fire danger may be underrated because rolling and blowing leaves are not accounted for. In the summer after the trees have leafed out, Fuel Model E should be replaced by Fuel Model R.

((~~D101.1.6~~)) 901.1.6 FUEL MODEL F. Fuel Model F is the only one of the 1972 NFDR System Fuel Models whose application has changed. Model F now represents mature closed chamise stands and oakbrush fields of Arizona, Utah and Colorado. It also applies to young, closed stands and mature, open stands of California mixed chaparral. Open stands of pinyon-juniper are represented; however, fire activity will be overrated at low wind speeds and where there is sparse ground fuels.

((~~D101.1.7~~)) 901.1.7 FUEL MODEL G. Fuel Model G is used for dense conifer stands where there is a heavy accumulation of litter and downed woody material. Such stands are typically overmature and may also be suffering insect, disease, wind or ice damage-natural events that create a very heavy buildup of dead material on the forest floor. The duff and litter are deep, and much of the woody material is more than 3 inches (76 mm) in diameter. The undergrowth is variable, but shrubs are usually restricted to openings. Types meant to be represented by Fuel Model G are hemlock-Sitka spruce, Coast Douglas-fir, and wind-thrown or bug-killed stands of lodgepole pine and spruce.

((~~D101.1.8~~)) 901.1.8 FUEL MODEL H. The short-needled conifers (white pines, spruces, larches and firs) are represented by Fuel Model H. In contrast to Model G fuels, Fuel Model H describes a healthy stand with sparse undergrowth and a thin layer of ground fuels. Fires in H fuels are typically slow spreading and are dangerous only in scattered areas where the downed woody material is concentrated.

((~~D101.1.9~~)) 901.1.9 FUEL MODEL I. Fuel Model I was designed for clearcut conifer slash where the total loading of materials less than 6 inches (152 mm) in diameter exceeds 25 tons/acre (56.1 metric tons/ha). After settling and the fines (needles and twigs) fall from the branches, Fuel Model I will overrate the fire potential. For lighter loadings of clearcut conifer slash, use Fuel Model J, and for light thinnings and partial cuts where the slash is scattered under a residual overstory, use Fuel Model K.

((~~D101.1.10~~)) 901.1.10 FUEL MODEL J. This model is complementary to Fuel Model I. It is for clearcuts and heavily thinned conifer stands where the total loading of materials less than 6 inches (152 mm) in diameter is less than 25 tons/acre (56.1 metric tons/ha). Again, as the slash ages, the fire potential will be overrated.

((~~D101.1.11~~)) 901.1.11 FUEL MODEL K. Slash fuels from light thinnings and partial cuts in conifer stands are represented by Fuel Model K. Typically, the slash is scattered about under an open overstory. This model applies to hardwood slash and to southern pine clearcuts where the loading of all fuels is less than 15 tons/acre (33.7 tons/ha).

((~~D101.1.12~~)) 901.1.12 FUEL MODEL L This fuel model is meant to represent western grasslands vegetated by perennial grasses. The principal species are coarser and the loadings heavier than those in Model A fuels. Otherwise, the situations are very similar; shrubs and trees occupy less than one-third of the area. The quantity of fuel in these areas is more stable from year to year. In sagebrush areas, Fuel Model T may be more appropriate.

((~~D101.1.13~~)) 901.1.13 FUEL MODEL N. This fuel model was constructed specifically for the saw-grass prairies of south Florida. It may be useful in other marsh situations where the fuel is coarse and reedlike. This model assumes that one-third of the aerial portion of the plants is dead. Fast-spreading, intense fires can occur even over standing water.

((~~D101.1.14~~)) 901.1.14 FUEL MODEL O. The O fuel model applies to dense, brushlike fuels of the Southeast. O fuels, except for a deep litter layer, are almost entirely living, in contrast to B fuels. The foliage burns readily, except during the active growing season. The plants are typically over 6 feet (1829 mm) tall and are often found under an open stand of pine.

The high pocosins of the Virginia, North and South Carolina coasts are the ideal of Fuel Model O. If the plants do not meet the 6-foot (1829 mm) criterion in those areas, Fuel Model D should be used.

((~~D101.1.15~~)) 901.1.15 FUEL MODEL P. Closed, thrifty stands of long-needled southern pines are characteristic of P fuels. A 2- to 4-inch (51 to 102 mm) layer of lightly compacted needle litter is the primary fuel. Some small-diameter branchwood is present, but the density of the canopy precludes more than a scattering of shrubs and grass. Fuel Model P has the high moisture of extinction characteristic of the Southeast. The corresponding model for other long-needled pines is U.

((~~D101.1.16~~)) 901.1.16 FUEL MODEL Q. Upland Alaskan black spruce is represented by Fuel Model Q. The stands are dense but have frequent openings filled with usually flammable shrub species. The forest floor is a deep layer of moss and lichens, but there is some needle litter and small-diameter branchwood. The branches are persistent on the trees, and ground fires easily reach into the tree crowns. This fuel model may be useful for jack pine stands in the Lake States. Ground fires are typically slow spreading, but a dangerous crowning potential exists.

((~~D101.1.17~~)) 901.1.17 FUEL MODEL R. This fuel model represents the hardwood areas after the canopies leaf out in the spring. It is provided as the off-season substitute for E. It should be used during the summer in all hardwood and mixed conifer-hardwood stands where more than half of the overstory is deciduous.

((~~D101.1.18~~)) 901.1.18 FUEL MODEL S. Alaskan or alpine tundra on relatively well-drained sites is the S fuel. Grass and low shrubs are often present, but the principal fuel is a deep layer of lichens and moss. Fires in these fuels are not fast spreading or intense, but are difficult to extinguish.

((~~D101.1.19~~)) 901.1.19 FUEL MODEL T. The bothersome sagebrush-grass types of the Great Basin and the Intermountain West are characteristic of T fuels. The shrubs burn easily and are not dense enough to shade out grass and other herbaceous plants. The shrubs must occupy at least one-third of the site or the A or L fuel models should be used. Fuel Model T might be used for immature scrub oak and desert shrub associations in the West, and the scrub oak-wire grass type in the Southeast.

((~~D101.1.20~~)) 901.1.20 FUEL MODEL U. Closed stands of western long-needled pines are covered by this model. The ground fuels are primarily litter and small branchwood. Grass and shrubs are precluded by the dense canopy but occur in the occasional natural opening. Fuel Model U should be used for ponderosa, Jeffrey, sugar pine, and red pine stands of the Lake States. Fuel Model P is the corresponding model for southern pine plantations.

[W] 901.2 Fuel model. A fuel model shall be submitted to the code official for review and approval as part of the plans required for a permit where one of the following criteria applies:

1. The building or structure does not meet the requirements of Sections 501.4 through 501.8, or Section 504 of this code.
2. When a finding of fact complying with Chapter 3, or Appendix E of this code, is required by the applicable sections of this code, or provided to establish a wildland-urban interface designation.
3. Where required by the code official.

CHAPTER ((~~7~~)) 10

REFERENCED STANDARDS

User note:

About this chapter: *This code contains numerous references to standards promulgated by other organizations that are used to provide requirements for materials and methods of construction. This chapter contains a comprehensive list of all standards that are referenced in this code. These standards, in essence, are part of this code to the extent of the reference to the standard.*

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard.

ASTM.

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

D2898—2010(2017). Test Methods for Accelerated Weathering of Fire-retardant-treated Wood for Fire Testing
503.2

D3909/D3909M—14. Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced With Mineral Granules
504.2, 504.2.1, 505.2, 505.2.1, 506.2, 506.2.1

D6662—2017. Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards
503.2

D7032—2017. Standard Specification for Establishing Performance Ratings for Wood-plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)
503.2

E84—2018b. Standard Test Method for Surface Burning Characteristics of Building Materials
202, 503.2

E108—2017. Standard Test Methods for Fire Tests of Roof Coverings
504.2, 505.2, 506.2

E119—2018b. Standard Test Methods for Fire Tests of Building Construction and Materials
501.3

E136—2019. Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C
202

[W] E2632-2020: Standard Test Method for Evaluating the Under-Deck Fire Test Response of Deck Materials
501.6

E2768—2011(2018). Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)
503.2

ICC.

International Code Council, Inc.
500 New Jersey Ave, NW
Washington, DC 20001

IBC—21. International Building Code®
106.1, 106.3, 107.3, 202, 404.10.3, 501.1, 501.2, 501.3, 503.2, 504.3, 504.5, 504.6, 504.7, 504.11, 505.5, 505.6, 505.7, 505.11

IFC—21. International Fire Code®
102.6, 106.1, 106.3, 202, 402.1.1, 402.2.1, 403.2.3, 404.10.3, 606.1, 606.2

IPMC—21. International Property Maintenance Code®
102.6

APPENDIX A

Note: Appendix A is not adopted by The City of Seattle.

APPENDICES G through I

Note: Appendices G through I are not adopted by The City of Seattle.