

ICC 605
Standard for Residential Construction in
Regions with Wildfire Hazard

Public Input Draft
11-12-24

DRAFT

PREFACE

❖ Commentary language is provided in the document using the Heavy Four Balloon-Spoked Asterisk (U+2724), Time News Roman size 11 font.

DRAFT

TABLE OF CONTENTS

CHAPTER 1 ADMINISTRATION AND APPLICATION

Section

101 General

CHAPTER 2 DEFINITIONS

Section

201 General

202 Definitions

CHAPTER 3 WILDFIRE HAZARD AREA DESIGN CRITERIA

Section

301 General

CHAPTER 4 FUEL MANAGEMENT

Section

401 General

402 Defensible Space Requirements

CHAPTER 5 NEW BUILDING CONSTRUCTION

Section

501 Scope

502 Materials and Assemblies

503 Wildfire Hazard Area (WHA) Class 1

504 Wildfire Hazard Area (WHA) Class 2

505 Wildfire Hazard Area (WHA) Class 3

506 Detached Accessory Structures

CHAPTER 6 EXISTING BUILDINGS

Section

601 Scope

602 General

603 Repairs

604 Alterations

605 Additions

606 Change of Use or Occupancy

607 Relocation

608 Inspection and Maintenance

CHAPTER 7 REFERENCED STANDARDS

APPENDIX A FIRE HAZARD SEVERITY

DRAFT

**CHAPTER 1
ADMINISTRATION AND APPLICATION**

**SECTION 101
GENERAL**

101.1 Scope. The provisions of this standard specify enhanced methodologies of wildfire-resistant design and construction for new and existing one- and two-family dwellings and townhouses not more than three stories above grade plane in height exposed to the hazard of wildfire.

This standard applies to construction, alteration, inspection, maintenance and repair of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height, their accessory structures, and the lot they are contained within, that are constructed in or relocated into areas exposed to the hazard of wildfire. This includes evaluation of the wildfire hazard in the area in which the structure will be located.

The standard contains provisions for walls, floors, roofs, foundations, windows, doors, decks and other applicable building elements or assemblies.

The standard also provides a methodology for repair or retrofit of existing residential dwellings exposed to the hazard of wildfire.

101.2 Objectives.

101.2.1 Wildfire mitigation. The standard is intended to assist with mitigating the effect of wildfires that spread to, or otherwise expose, wildfire hazard areas by establishing minimum standards for construction and maintenance of buildings and parcels subject to wildfire hazard.

101.2.2 Vegetation management. This standard provides minimum requirements for vegetation management.

101.2.3 Accessory dwelling units and tiny houses. For the purposes of this standard, accessory dwelling units and tiny houses shall meet the provisions of one- or two-family dwellings.

101.3.1 Wildfire mitigation. The standard is not intended to prevent conflagrations that have developed as a result of wildfires and extend beyond wildfire hazard areas. The standard is intended to limit spread of fire to other structures.

101.3.2 Fire hazard severity. Determination of fire hazard severity is not within the scope of this standard. Where this standard describes provisions based on fire hazard severity, fire hazard severity shall be determined by the authority having jurisdiction. Appendix A of this standard offers examples for determining fire hazard severity.

101.3.3 Wildfire mapping. Mapping of wildfire hazard areas is not within the scope of this standard.

101.3.4 Classification of vegetation. This standard does not classify vegetative fuels or species that may exhibit reduced combustibility.

101.2.5 Maintenance. [Reserved.]

101.4 Alternative means and methods. A large number of alternatives are available to a designer for providing fire-resistant designs and construction details. The provisions given are not intended to prevent the use of alternative materials or methods as permitted by Section R104. 2.2 of the *International Residential Code*.

101.5 Items not addressed. Elements and assemblies not specifically addressed by this standard shall be designed and constructed in accordance with the *International Residential Code*.

CHAPTER 2 DEFINITIONS

SECTION 201 GENERAL

201.1 General. For the purposes of this standard, the terms listed in Section 202 shall have the indicated meaning. Initialisms bracketed after a defined term indicate the I-Code from which it is sourced.

201.2 Undefined terms. The terms not specifically defined in this standard or in standards referenced herein shall have ordinarily accepted meaning such as the context implies.

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

201.4 Terms defined in other ICC publications. Where terms are not defined in this code, such terms shall have the meanings ascribed in other code or standard publications of the International Code Council.

SECTION 202 DEFINITIONS

ACCESSORY DWELLING UNIT (ADU). An additional, subordinate dwelling unit on the same lot that is entirely within a dwelling unit, attached to a dwelling unit or in a detached structure.

ACCESSORY STRUCTURE [IFC]. A building or structure used to shelter or support any material, equipment, chattel or occupancy other than a habitable building.

ALTERATION [IFC]. Any construction or renovation to an existing structure other than a repair or addition.

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

AREA, BUILDING [IFC]. The area included within surrounding exterior walls (or exterior walls and fire walls) exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

BONFIRE [IFC]. An outdoor fire used for ceremonial services.

BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this standard, or a duly authorized representative.

CEREMONIAL FIRE. [Reserved.]

CROWN FIRE. A fire extending into, and often above, the tree canopy within a forest or group of trees.

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 on each side of the building to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

DRIP LINE. A line defined by the anticipated outermost perimeter of vegetation [canopy] growth where water drips from the branches or limbs and onto the ground (edge of the canopy).

DRIVEWAY. A vehicular ingress and egress route that serves not more than two buildings or structures, not including accessory structures, or more than five dwelling units.

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

EMBER. A particle of solid material that emits radiant energy due either to its temperature or to the process of combustion on its surface and that poses a risk of ignition to any materials upon which it is incident.

DIRECT EMBER IGNITION. When embers ignite building materials and/or furnishings via conductive or radiant heat (i.e., direct contact).

DIRECT EMBER RESISTANCE. [Reserved.]

ENFORCING AGENCY. The entity responsible for the enforcement of building codes and standards.

EXISTING BUILDING. A building legally in existence prior to the date of adoption of this standard by the authority having jurisdiction, or one for which a legal building permit has been issued.

EXTERIOR SURFACES [IBC]. Weather-exposed surfaces.

EXTERIOR WALL [IRC]. An above-grade wall that defines the exterior boundaries of a building. Includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, gable end roof trusses, walls enclosing a mansard roof and basement walls with an average below-grade wall that is less than 50 percent of the total opaque and nonopaque area of that enclosing side.

EXTERIOR WALL ASSEMBLY [2024 IBC]. A system including the exterior wall covering, framing, and components such as weather-resistive barriers and insulating materials. This system provides protection of the building structural members and conditioned interior space from the detrimental effects of the exterior environment.

EXTERIOR WALL COVERING [IRC]. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather resistive barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments such as cornices.

FIRE APPARATUS ACCESS ROAD. A road that provides access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane or access roadway.

FIREBRAND: See “Ember.”

FIRE CODE OFFICIAL. The fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative.

FIRE DEPARTMENT MASTER KEY [IFC]. A limited issue key of special or controlled design to be carried by fire department officials in command which will open key boxes on specified properties.

FIRE LANE. [Reserved.]

FIRE-RETARDANT-TREATED WOOD. Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire.

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.

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 or UL 723.

FIRE RESISTANCE [IBC]. That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

FIRE-RESISTANCE RATING. A measure of the fire resistance of a member or assembly, expressed in units of hours, under specified exposure conditions.

FIRE-SMART VEGETATION. Plants, shrubs, trees and other vegetation that exhibit properties, such as high moisture content, little accumulation of dead vegetation and low sap or resin content, that make them less likely to ignite or contribute heat or spread flame in a fire than native vegetation typically found in the region.

FUEL BREAK. [Reserved.]

FUEL LOAD. The aggregate sum of the vegetative fuels and structural fuel loads.

STRUCTURAL FUEL LOAD. The sum of the mass of each combustible structural element multiplied by the heat of combustion. This does not include the contents of the building.

FUEL MODIFICATION ZONES. A zone in which the fuel load has been modified by reducing the amount of combustibles or altering the vegetation or other fuel types to reduce the fuel load.

HABITABLE BUILDING. A building or portion thereof designed for living, sleeping, eating or cooking.

IGNITION-RESISTANT BUILDING MATERIAL [IWUIC 2024]. A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildfire exposure of burning embers and small flames.

KEY BOX [IFC]. A secure device with a lock operable only by a fire department master key, and containing building entry keys and other keys that may be required for access in an emergency

LADDER FUELS. Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

PUBLIC SAFETY AGENCY. Any emergency responder department within the jurisdiction that utilizes radio frequencies for communication. This could include, but is not limited to, various public safety agencies such as fire departments, emergency medical services and law enforcement.

REPAIR [IEBC]. The reconstruction, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

ROOF ASSEMBLY [IRC 2024]. A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering, roof deck and framing members or a single component serving as the roof covering, roof deck and roof structure. A roof assembly can include an underlayment, thermal barrier, ignition barrier, insulation or a vapor retarder.

ROOF COVERING [IRC 2024]. The covering applied to the roof deck for weather resistance, fire classification or appearance.

ROOF DECK [IRC 2024]. The flat or sloped surface not including its supporting members or vertical supports.

SLOPE. The change in terrain elevation relative to a horizontal distance, expressed as a percentage.

STRUCTURE FIRE. [Reserved.]

SUBDIVISION. The division of a tract, lot or parcel of land into two or more lots, plots, sites or other divisions of land.

TINY HOUSE. A dwelling that is 400 square feet (37 m²) or less in floor area excluding lofts.

VEGETATIVE FUELS. Combustible vegetation of light, medium or heavy fuels.

VENTILATION OPENINGS. [Reserved.]

WILDFIRE EXPOSURE. Fire exposure consisting of one or more of the following: burning embers, radiant heat, and direct flame impingement to a structure.

WILDFIRE HAZARD AREAS (WHA). A geographic area designated by the local jurisdiction with fire hazard severity of medium, high or extreme factors of wildfire exposure.

WILDFIRE HAZARD AREA (WHA) CONSTRUCTION CLASS. One of three sets of additional requirements for construction of residential buildings in wildfire hazard areas, classified as WHA construction Class 1, WHA construction Class 2 or WHA construction Class 3.

**CHAPTER 3
WILDFIRE HAZARD AREA DESIGN CRITERIA**

**SECTION 301
General**

301.1 Scope. The provisions of this chapter provide a methodology to design one- and two-family dwellings up to three stories and associated *accessory structures* within *wildfire hazard areas* based on design exposures during a wildfire.

301.2. Buildings. New buildings constructed in or buildings relocated into *wildfire hazard areas* shall be evaluated based on the provided *defensible space* distance and expected exposure, assessed independently for each side of the structure in accordance with Table 301.2, and comply with the requirements of this standard.

Repair, addition or alteration of existing buildings in wildfire hazard areas shall comply with Chapter 6, based on provided defensible space distance assessed independently for each side of the structure in accordance with Table 301.2. Provided defensible space area for each side of the structure shall be in accordance with Figure 301.2.

❖ **Note:** Further information provided in the commentary to this chapter.

Exception: Where covenants or other agreements permit owners, tenants or associations to manage vegetation outside lot lines, such areas shall be maintained and considered as part of the provided *defensible space*.

Table 301.2. Wildfire exposure and construction classification for buildings

PROVIDED DEFENSIBLE SPACE	EXPECTED WILDFIRE EXPOSURE	WHA CONSTRUCTION CLASS
Less than the minimum defensible space distances specified in Table 402.2	Direct flame contact, radiant heat and ember exposure	Constructed in accordance with Section 503
Minimum defensible space distances specified in Table 402.2	Radiant heat and ember exposure	Constructed in accordance with Section 504
Expanded defensible space distances specified in Table 402.2	Ember exposure	Constructed in accordance with Section 505

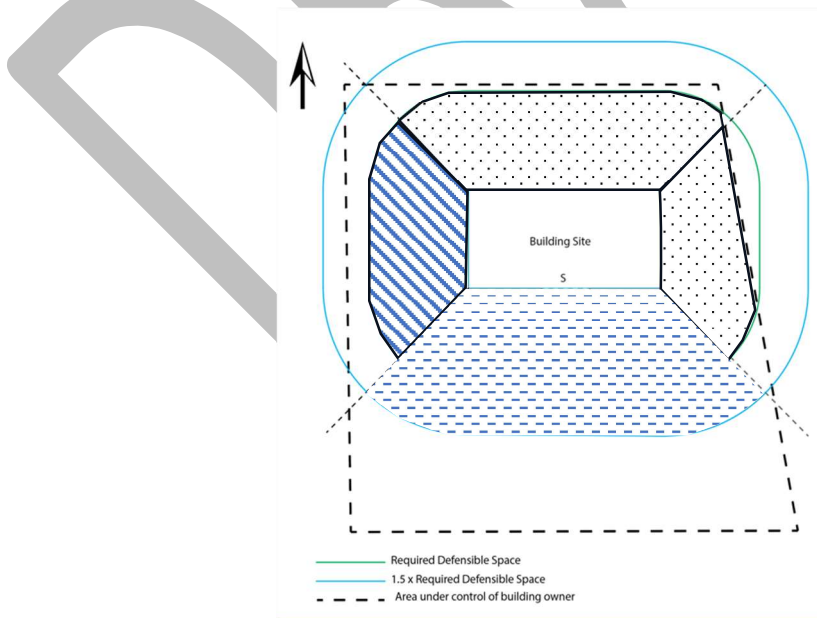


Figure 301.2. Provided defensible space for each side of building.

301.2.1. Unenclosed attached accessory structures. New unenclosed attached accessory structures constructed in or unenclosed attached accessory structures relocated into a wildfire hazard area shall be evaluated based on the shortest provided defensible space distance of all sides of the unenclosed attached accessory structure in accordance with Table 301.2.1 and comply with the requirements of this standard.

Repair, addition, or alteration of existing *unenclosed attached accessory structures in wildfire hazard areas* shall comply with Chapter 6, based on the shortest provided *defensible space* distance on all sides of the unenclosed attached accessory structure in accordance with Table 301.2.1.

Determination of provided *defensible space* and corresponding design criteria for *unenclosed attached accessory structures* shall be performed independently from the building to which the *unenclosed accessory structure* is attached. Provided *defensible space* area for each side of the *unenclosed attached accessory structures* shall be in accordance with Figure 301.2.1.

Exception: Where covenants or other agreements permit owners, tenants or associations to manage vegetation outside lot lines, such areas shall be maintained and considered part of the provided *defensible space*.

❖ **Note:** Further information provided in the commentary to this chapter.

Table 301.2.1. Wildfire exposure and construction classification for unenclosed attached accessory structures based on shortest provided defensible space distance

Shortest Provided Defensible Space Distance of all sides	Expected wildfire exposure	WHA Construction Class
Less than the minimum defensible space distances specified in Table 402.2	Direct flame contact, radiant heat and ember exposure	Constructed in accordance with Section 503.7
Minimum defensible space distances specified in Table 402.2	Radiant heat and ember exposure	Constructed in accordance with Section 504.7
Expanded defensible space distances specified in Table 402.2	Ember exposure	Constructed in accordance with Section 505.7

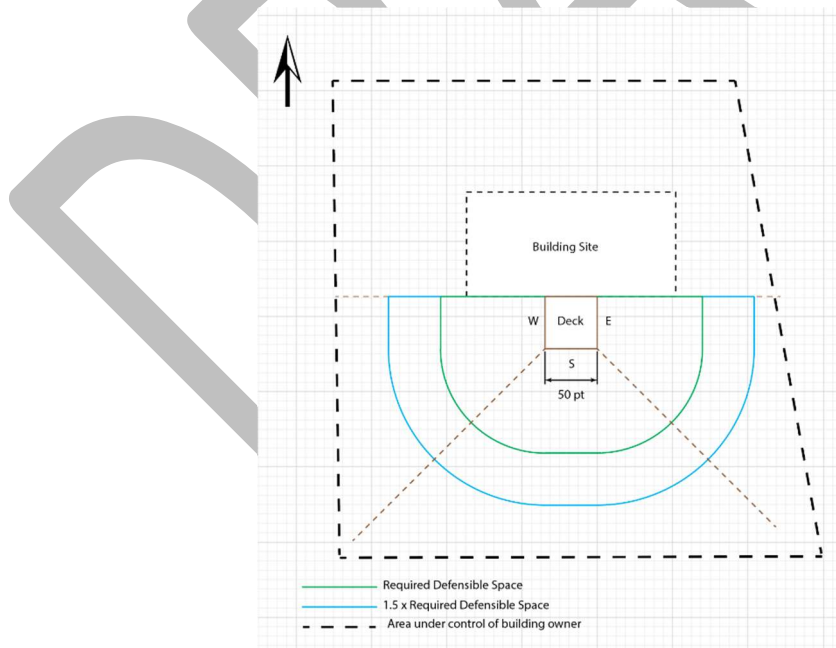


Figure 301.2.1. Required defensible space around unenclosed attached accessory structures.

301.2.2. Detached accessory structures. Detached *accessory structures* shall be sited and oriented in accordance with Section 402.3. New detached *accessory structures* constructed in or detached *accessory structures* relocated in *wildfire hazard areas* shall be evaluated based on horizontal distance from buildings containing habitable space on the same lot and in accordance with Table 301.2.2.

Repair, addition, or alteration of existing detached *accessory structures in wildfire hazard areas* shall comply with Chapter 6, based on horizontal distance from buildings containing habitable space on the same lot and in accordance with Table 301.2.2.

Defensible space shall be provided around detached *accessory structures* in accordance with Section 402.3.1.

TABLE 301.2.2. MINIMUM DISTANCE FROM ADJACENT ONE- AND TWO-FAMILY DWELLING(S) ON THE SAME LOT

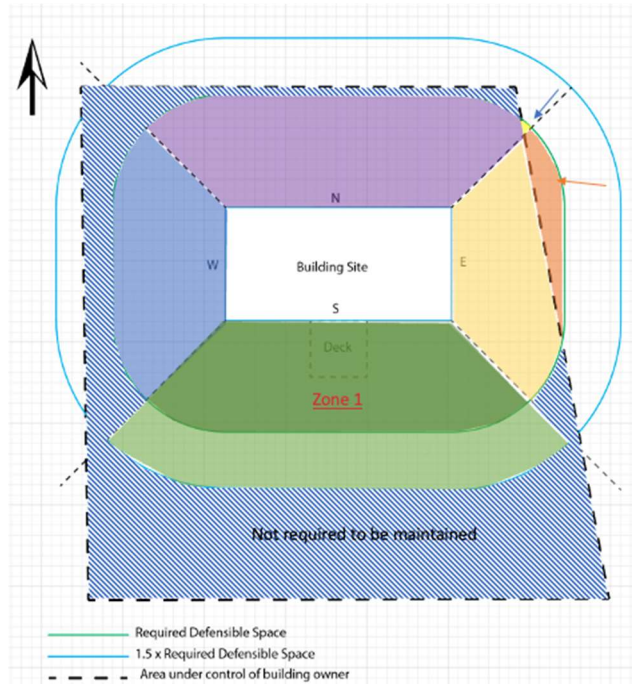
DETACHED ACCESSORY STRUCTURE	WILDFIRE HAZARD AREA Construction		
	Class 1	Class 2	Class 3
Type A	5 ft	5 ft	5 ft
Type B	5 ft	30 ft	30 ft
Type C	5 ft	30 ft	30 ft

❖ Commentary:

❖ **301.2. Example for designing a building in WHA area.** Figure 1 provides an example for designing buildings and structures based on the provided defensible space on each side. In this example building located in area with extreme wildfire hazard and according to Table 402.3, required defensible space distance in this condition is equal to 100 feet. As it is shown in Figure 1:

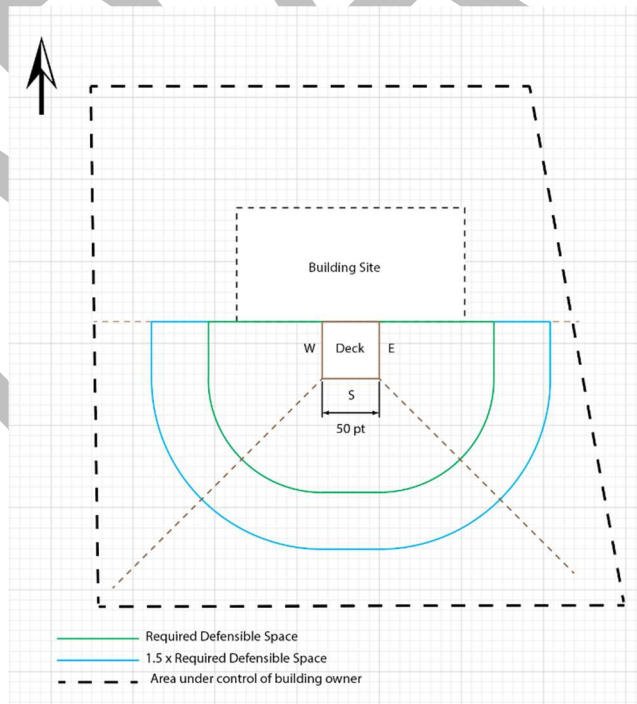
- On the northern side of the building, area under control of building owner is less than required defensible space (blue arrow shows the area outside control of building owner). As a result, this side must be constructed by considering direct flame contact, radiation heat and ember exposures and in accordance with WHA Construction Class 1 (Section 503). The fuel modification area on this side (purple area) will be limited to the lot lines or required defensible space distance (green line) whichever is less.
- On the eastern side of the building, area under control of building owner is less than required defensible space (orange arrow shows the area outside control of building owner). As a result, this side must be constructed by considering direct flame contact, radiation heat and ember exposures and in accordance with WHA Construction Class 1 (Section 503). The fuel modification area on this side (yellow area) will be limited to the lot lines or required defensible space distance (green line), whichever is less.
- On the southern side of the building, area under control of building owner is more than 1.5 times of required defensible space. As a result, this side can be constructed in three different ways:
 - a. To only resist against ember exposure and in accordance with WHA Construction Class 3 (Section 505). In this case, maintenance of defensible space area on this side (green area) will be limited to the lot lines or 1.5 times of required defensible space distance (blue line), whichever is less.
 - b. To resist against ember and radiation heat exposures and in accordance with WHA Construction Class 2 (Section 504). In this case, the fuel modification area on this side (Zone 1, dark green area) will be limited to the lot lines or required defensible space distance (green line), whichever is less.
 - c. To resist against ember, radiation heat and direct flame contact exposures and in accordance with WHA Construction Class 1 (Section 503). In this case, the fuel modification area on this side (dark green area) will be limited to the lot lines or required defensible space distance (green line), whichever is less—which in this example will be the same as method b and dark green area (Zone 1).
- On the western side of the building, area under control of building owner is more than required defensible space and less than 1.5 times of this distance. As a result, this side can be constructed in two different ways:
 - a. To resist against ember and radiation heat exposures and in accordance with WHA Construction Class 2 (Section 504). The defensible space area on this side will be limited to the green line (blue line if using 1.5 times the defensible space).

- b. To resist against ember, radiation heat and direct flame contact exposures and in accordance with WHA Construction Class 1 (Section 503). The defensible space area on this side will be limited to the green line (blue line if using 1.5 times the defensible space).



Commentary Figure 301.2. Required defensible space around building

❖301.2.1. Example for designing an unclosed accessory structure in WHA area.



Commentary Figure 301.2.1. Required defensible space around unenclosed attached accessory structures.

CHAPTER 4 FUEL MANAGEMENT

SECTION 401 GENERAL

401.1 Scope. Fuel management on the premises of new and existing buildings and associated accessory structures located within *wildfire hazard areas* shall comply with this chapter.

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

SECTION 402 DEFENSIBLE SPACE REQUIREMENTS

402.1 Objective. Provisions of this section are intended to modify the *fuel load* in areas adjacent to structures to create a *defensible space* that protects building against exposure to direct flame contact and reduces the radiant heat and ember exposures to a level that minimizes potential for ignition or other damage to buildings and structures.

❖**Commentary:** The target wildland fire exposure for a structure in wildfire hazard areas are ember exposure, and heat exposure less than 15 kW/m². These exposures form the basis of the defensible space provisions of Section 402.

402.2 Defensible space distance. The provisions of this section establish *defensible space* distances based on fire hazard severity. Minimum and expanded *defensible space* distances shall be in accordance with Table 402.2. *Defensible space* distances shall be maintained in accordance with Sections 402.3 and 402.4.

TABLE 402.2. DEFENSIBLE SPACE DISTANCES

FIRE HAZARD SEVERITY	MINIMUM DEFENSIBLE SPACE (feet)	EXPANDED DEFENSIBLE SPACE (feet)
Moderate	30	45
High	50	75
Extreme	100	150

For SI: 1 foot = 304.8 mm.

402.2.1 Minimum defensible space. The minimum required *defensible space* distances based on fire hazard severity shall be in accordance with Table 402.2. Where the provided *defensible space* is equal to the minimum *defensible space* distance, those sides of building shall be constructed in accordance with Table 301.2 to resist radiant heat and ember exposures.

Where the provided *defensible space* for *unenclosed accessory structure* is equal to the minimum *defensible space* distance, *unenclosed accessory structures* shall be constructed in accordance with Table 301.2.1 to resist radiant heat and ember exposures.

402.2.2 Expanded defensible space. Where the expanded *defensible space* distances in Table 402.2 are provided, those sides of building shall be constructed in accordance with Table 301.2 to resist against ember exposure.

Where the provided *defensible space* of *unenclosed accessory structure* is 1.5 times the minimum *defensible space* distances of Table 402.2, the *unenclosed accessory structure* shall be constructed in accordance with Table 301.2.1 to resist against ember exposure.

402.2.3. Lot-limited defensible space. Where the property does not allow for the required minimum *defensible space* distances along the entire length of any structure's exposure, the provided *defensible space* shall extend to the lot line. In such cases, those sides of the building with lot-limited *defensible space* distances shall be constructed in accordance with Table 301.2 to resist against direct flame contact, radiant heat and ember exposures.

Where the required minimum *defensible space* for an *unenclosed attached accessory structure* cannot be provided on the lot, the provided *defensible space* shall extend to the lot line and the *unenclosed attached accessory structure* shall be constructed in accordance with Table 301.2.1 to resist against direct flame contact, radiant heat and ember exposures.

402.2.4 Landscape plans. Landscape plans shall be provided where required by the *enforcing agency*. The landscape plan shall include development and maintenance requirements for the *management zone* adjacent to buildings or structures.

402.2.4.1 Contents. Landscape plans shall be drawn to scale, and shall contain the following:

1. Delineation of the horizontal projection of all buildings and structures on the lot.
2. Labels identifying the assigned WHA construction classification for each side of buildings and structures.
3. Delineation of fuel management zones, as measured from the horizontal projection of buildings or structures.
4. Identification of location and species of existing vegetation to remain and proposed new vegetation.
5. A plant legend with both botanical and common names, and identification of all plant material symbols.
6. Identification of location and species of ground coverings within the 5-foot (1524 mm) zone.
7. Identification of ground *slope* within the provided *defensible space* on each side.

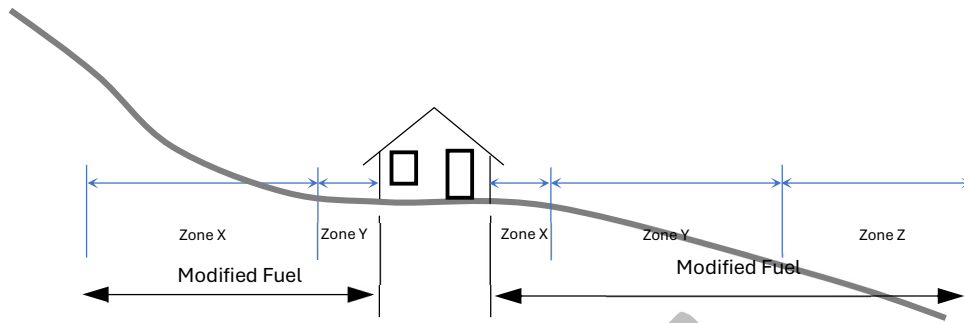
402.2.4.2 Defensible space sign. Provided *defensible space* area shall be identified by a permanent sign approved by the *enforcing agency*, placed next to, or adjacent to, a permanent fixture such as exterior water faucet, exterior water meter or electrical box. The sign shall identify fire hazard severity, provided *defensible space* distances, *WHA construction classification*, ground *slope* on each side and the applicable edition of this standard.

❖ **Commentary: An example of a defensible space sign.** *

Building Sides	Provided Defensible Space (ft)	WHA Construction Classification	Slope (%)
Side A			
Side B			
Side C			

*Building located in area with extreme wildfire hazard severity and constructed in accordance with ICC 605-2024. Please note that building can be designed with different number of sides. It can be constructed with one type of construction or as many as applicable according to defensible space condition.

402.3 Defensible space zones. The provided *defensible space* is the area as shown in Figure 402.3 that represents the *defensible space* between the structure and the surrounding area. In areas where two or more different zones overlap, the most stringent zone requirements shall apply.



**FIGURE 402.3
PROVIDED DEFENSIBLE SPACE AREA AND
FUEL MODIFICATION ZONES**

402.3.1 Zone X (0 to 5 feet). Zone X initiates from the edges of the exterior walls of buildings or structures and extends 5 feet (1524 mm) horizontally away from the perimeter of all projections. This zone shall be maintained in accordance with the following:

1. Any ground cover shall be noncombustible, such as gravel, pavers or bare soil. Combustible ground covers such as bark and mulch shall not be permitted in this zone.
2. All vegetation shall be removed from this zone. New vegetation shall not be permitted within this zone.

Exception: Where approved by the enforcing agency, existing heritage trees and existing *fire smart vegetation* maintained in accordance with Section 402.4 shall be permitted adjacent to sides constructed in accordance with Section 503.

3. Fences, gates and arbors within Zone X shall be constructed with noncombustible materials.

Exception: Fences constructed with combustible materials shall be permitted provided the structure is constructed in accordance with Section 503.

4. Detached accessory structures are not permitted in this zone.
5. Storage of combustible material is prohibited in Zone X. A permanent sign shall be installed in each unenclosed underfloor area, stating the following: "Storage of combustible material is prohibited in this location."

Exceptions:

1. Combustible material contained in a fully enclosed noncombustible storage container.
2. Combustible material where the structure is constructed in accordance with Section 503. The permanent sign shall not be required in unenclosed underfloor areas constructed in accordance with Section 503.
6. All exterior surfaces of buildings such as gutters, roofs and decks, and areas within Zone X shall be maintained free of accumulated combustible debris.

402.3.2 Zone Y (5 to 30 feet). Zone Y initiates after Zone X and extends to 30 feet (9144 mm) from the building. Zone Y shall be maintained in accordance with the following:

1. Groundcover vegetation shall be maintained in accordance with Section 402.4.1.
2. Shrubs shall be maintained in accordance with Section 402.4.2.
3. All trees shall be removed from this area.

Exceptions:

1. Trees trimmed and maintained in accordance with shrubs requirements provided in Section 402.4.2.
2. Existing heritage trees approved by the enforcing agency and maintained in accordance with Section 402.4.3, provided the structure is constructed in accordance with Section 503.
4. All portions of fences, gates and arbors within 10 feet (3048 mm) from structure shall be constructed with approved noncombustible materials.

Exceptions:

1. Fences, gates and arbors with a total height not exceeding 5 feet (1524 mm) above the ground.
2. Fences constructed with combustible materials, provided the structure is constructed in accordance with Section 503.
5. All detached accessory structures located within Zone Y shall comply with Section 301.2.2 or be retrofit in accordance with Chapter 6. Exterior openings on enclosed detached accessory structures located less than 20 feet (6096 mm) from a building containing habitable space shall be limited to the sides that are not facing the building. *Defensible space* shall be provided around detached *accessory structures* in accordance with Section 402.3.1.

Exception: Detached *accessory structures* constructed with noncombustible or ignition-resistant material, not exceeding 200 square feet (11 m²) in floor area, where located not less than 20 feet (6096 mm) from buildings containing habitable spaces. *Defensible space* shall be provided around detached *accessory structures* in accordance with Section 402.3.1.

6. Storage of combustible material is prohibited in Zone Y.

Exceptions:

1. Combustible material contained in a fully enclosed noncombustible storage container.
2. Combustible material where the structure is constructed in accordance with Section 503.
7. All areas within Zone Y shall be maintained free of combustible debris.

402.3.3 Zone Z (30 to 150 feet). Zone Z initiates after Zone Y and extends the distance specified in Section 402.3.4. Zone Z shall be maintained in accordance with the following:

1. Ground cover vegetation shall be maintained in accordance with Section 402.4.1.
2. Shrubs shall be maintained in accordance with Section 402.4.2.
3. Trees shall be maintained in accordance with Section 402.4.3.
4. A 10-foot (3048 mm) clearance around exposed wood piles shall be provided by noncombustible ground covering in all directions.
5. LP-gas containers or tanks located in Zone Z shall be in accordance with the International Fire Code. A 10 feet (3048 mm) clearance around LP-gas containers shall be provided by noncombustible ground covering in all directions.
6. All detached accessory structures located within Zone Z shall comply with Section 301.2.2 or be retrofit in accordance with Chapter 6. *Defensible space* shall be provided around detached *accessory structures* in accordance with Section 402.3.1.

Exception: Detached accessory structures not exceeding 200 square feet (11 m²) in floor area where located not less than 30 feet (9144 mm) from buildings containing habitable spaces on the same lot. *Defensible space* shall be provided around detached *accessory structures* in accordance with Section 402.3.1.

402.3.4 Required defensible space zones. Required defensible space zones based on defensible space distances and fire hazard severity in Table 402.2 shall be in accordance with Tables 402.3.4.1, 402.3.4.2 and 402.3.4.3.

TABLE 402.3.4.1. MINIMUM DEFENSIBLE SPACE DISTANCES AND CORRESPONDING ZONES

FIRE HAZARD SEVERITY	DEFENSIBLE SPACE DISTANCE (feet)	REQUIRED ZONES – DISTANCE FROM BUILDING (feet)		
		Zone X	Zone Y	Zone Z
Moderate	30	0–5	5–30	N/A
High	50	0–5	5–30	30–50
Extreme	100	0–5	5–30	30–100

For SI: 1 foot = 304.8 mm.

TABLE 402.3.4.2. LOT-LIMITED DEFENSIBLE SPACE DISTANCES AND CORRESPONDING ZONES

FIRE HAZARD SEVERITY	DEFENSIBLE SPACE DISTANCE (feet)	REQUIRED ZONES – DISTANCE FROM BUILDING (feet)		
		Zone X	Zone Y	Zone Z
Moderate	Extend to lot line	0–5	From 5 ft to lot line	N/A
High	Extend to lot line	0–5	5–30 (or to lot line, if closer than 30 ft)	From 30 ft to lot line
Extreme	Extend to lot line	0–5	5–30 (or to lot line, if closer than 30 ft)	From 30 ft to lot line

For SI: 1 foot = 304.8 mm.
N/A = Not Applicable.

TABLE 402.3.4.3. EXPANDED DEFENSIBLE SPACE DISTANCES AND CORRESPONDING ZONES

FIRE HAZARD SEVERITY	DEFENSIBLE SPACE DISTANCE (feet)	REQUIRED ZONES – DISTANCE FROM BUILDING (feet)		
		Zone X	Zone Y	Zone Z
Moderate	45	0–5	5–30	30–45
High	75	0–5	5–30	30–75
Extreme	150	0–5	5–30	30–150

For SI: 1 foot = 304.8 mm.

402.4 Vegetation management. All new vegetation in the provided *defensible space* shall be approved *fire smart vegetation*.

402.4.1 Groundcover vegetation. All groundcover vegetation within the provided *defensible space* shall comply with the following:

1. Groundcover vegetation shall not exceed 6 inches (152 mm) in height.
2. Groundcover vegetation shall be separated horizontally from crown of shrubs, trees and combustible structures such as fences and detached accessory structures a minimum of 12 inches (3045 mm).

402.4.2 Shrubs. All shrubs within the *defensible space* shall comply with the following:

1. Shrubs located in Zone Y shall not exceed 5 feet (1524 mm) in height.
2. Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet (3048 mm).
3. Shrub groupings shall be separated from other groupings and structures in accordance with Table 402.4.3.
4. Shrubs shall be pruned to remove limbs to a height of 12 inches (305 mm) above the ground surface or 25 percent of the total crown height, whichever is less.
5. No combustible material or debris allowed under the shrub canopy.
6. Shrubs shall be maintained in a healthy state, by regular and appropriate watering and removal of dead material.
7. Shrubs shall be separated from combustible structures such as fences and detached accessory structures a minimum of 5 feet (1524 mm).

402.4.3 Trees. All trees within the provided *defensible space* shall comply with the following:

1. The horizontal distance between crowns of trees shall be in accordance with Table 402.4.3.
2. Tree crowns shall be pruned to remove limbs to a height 6 feet (1829 mm) above the ground surface or 25 percent of the total crown height, whichever is less.
3. Combustible material is prohibited under the tree canopy.
4. Trees shall be separated from shrubs, other trees and the structure in accordance with Table 402.4.3.
5. Trees shall be maintained in a healthy state by regular and appropriate watering and removal of dead material.
6. Tree branches shall be separated from combustible structures such as fences, sheds or other detached accessory structures a minimum of 10 feet (3048 mm).

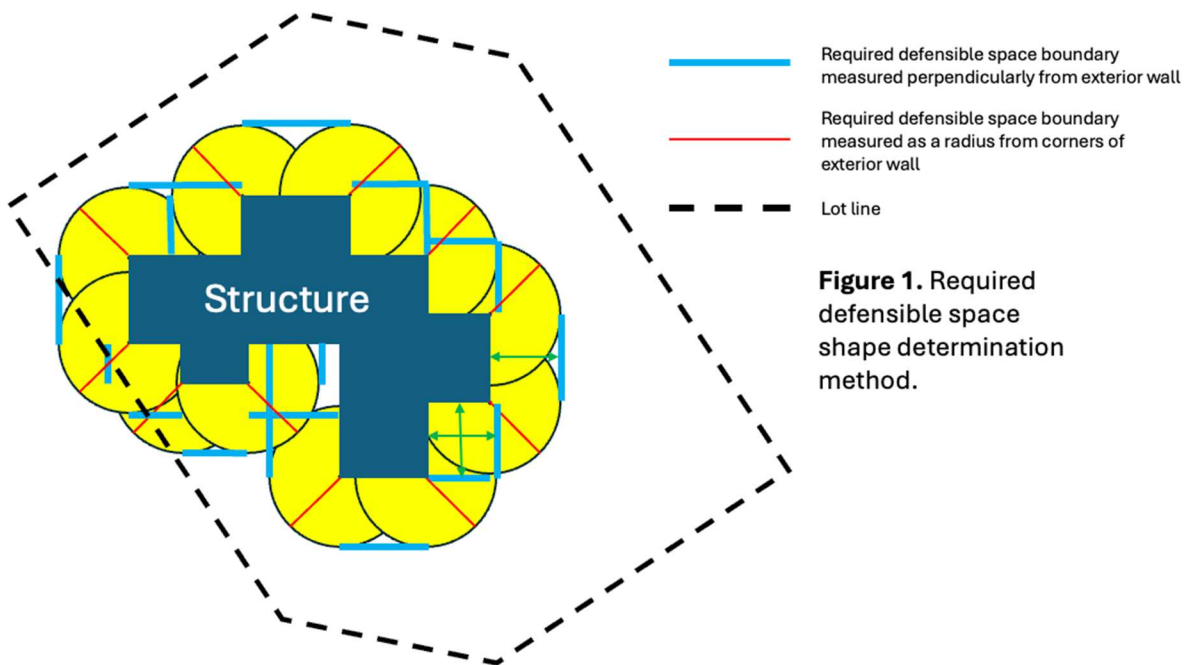
**TABLE 402.4.3
MINIMUM HORIZONTAL DISTANCE FROM EDGE OF ONE PLANT CANOPY TO ANOTHER**

VEGETATION TYPE	SLOPE ^a	HORIZONTAL DISTANCE (feet) ^b
Shrubs and trees	Less than 8%	10
	8%–20%	20
	Greater than 20%	30

For SI: 1 foot = 304.8 mm.

- a. Where approved by the enforcing agency, distances are allowed to be reduced based on a site-specific analysis based on local conditions and the fire protection plan.
- b. The required defensible space is represented as a continuous line measured perpendicularly from all sides of the structure and as a radius from all outside and reentrant corners (Commentary Figure 402.4.3).

The maximum space contained by the continuous combination of lines and arcs represent the required defensible space in accordance with Section 402. Required defensible space distance for curved exterior sides shall be measured perpendicularly to the tangent of the arc along the entire arc.



COMMENTARY FIGURE 402.4.3 – Required Defensible Space Determination Method

**CHAPTER 5
NEW BUILDING CONSTRUCTION**

**SECTION 501
SCOPE**

501.1 Scope. New construction shall meet the requirements of this chapter and the applicable codes.

❖ The scope of this chapter assumes coordination with Chapter 3.

**SECTION 502
MATERIALS AND ASSEMBLIES**

502.1 General. Materials and assemblies shall comply with the applicable requirements of Sections 502.2 through 502.3. Intersections of different wildfire hazard area (WHA) construction classes or of different materials shall comply with the applicable requirements of Section 502.4.

502.2 Materials.

502.2.1 Noncombustible material. Materials required to be noncombustible shall be tested in accordance with ASTM E136 and pass the test. Alternately, materials required to be noncombustible shall be tested in accordance with ASTM E2652 using the acceptance criteria prescribed by ASTM E136.

Exception: Materials having a structural base of noncombustible material as determined in accordance with ASTM E136, or with ASTM E2652 using the acceptance criteria prescribed by ASTM E136, with a surfacing of not more than 0.125 inch (3.18 mm) in thickness having a flame spread index not greater than 50 when tested in accordance with ASTM E84 or UL 723 shall be acceptable as noncombustible.

502.2.2 Fire-retardant-treated wood. For the purposes of this standard, fire-retardant-treated wood is wood identified for exterior use and meeting the requirements of Section R302.15 of the *International Residential Code*.

502.2.3 Ignition-resistant building material. Material shall be tested on the front and back faces in accordance with the extended ASTM E84 or UL 723 test, for a total test period of 30 minutes, or with the ASTM E2768 test. The materials shall bear identification showing the fire test results. Panel products shall be tested with a ripped or cut longitudinal gap of 1/8 inch (3.18 mm). The materials, 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, shall comply with Sections 503.2.3.1 through 503.2.3.3.

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.

502.2.3.1 Flame spread. The material shall exhibit a flame spread index not exceeding 25.

502.2.3.2 Flame front. The material shall exhibit a flame front that does not progress more than 10 feet 6 inches (3200 mm) beyond the centerline of the burner at any time during the test.

502.2.3.3 Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this section under conditions of use. The materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in Sections 503.1.3.3.1 through 503.1.3.3.3, as applicable to the materials and conditions of use.

502.2.3.3.1 Evaluation requirements for weathering. Fire-retardant-treated wood, wood-plastic composite materials and plastic lumber materials shall be evaluated after weathering in accordance with Method A, "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing," in ASTM D2898.

502.2.3.3.2 Wood-plastic composite materials. Wood-plastic composite materials shall demonstrate acceptable fire performance after weathering by the following procedure: first testing in accordance with ASTM E1354 at an incident heat flux of 50 kW/m² in the horizontal

orientation, then weathering in accordance with ASTM D7032, and then retesting in accordance with ASTM E1354 and exhibiting an increase of not more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

502.2.3.3.3 Plastic lumber materials. Plastic lumber materials shall demonstrate acceptable fire performance after weathering by the following procedure: first testing in accordance with ASTM E1354 at an incident heat flux of 50 kW/m² in the horizontal orientation, then weathering in accordance with ASTM D6662, and then retesting in accordance with ASTM E1354 and exhibiting an increase of not more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

502.3 Assemblies.

502.3.1 Fire-resistance-rated construction. Where this standard requires fire-resistance-rated construction, the rating of building elements, components or assemblies from the exterior side shall be determined by the test procedures set forth in ASTM E119 or UL 263 or established, based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263, by any of the following analytical methods:

1. Fire-resistant designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements, components or assemblies as prescribed in Section 721.
3. Calculations in accordance with Section 722.
4. Engineering analysis based on a comparison of building element, component or assembly designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E119 or UL 263.
5. Fire-resistant designs certified by an approved agency.
6. Fire-resistance-rated log wall construction in accordance with Section 303 of ICC 400.

502.3.2 Fire-retardant-treated wood roof coverings. Roof assemblies that contain fire-retardant-treated wood shingles and shakes shall comply with the requirements of Section R902.2 of the *International Residential Code* and be classified as Class A roof assemblies as required in Section 502.3.3.

502.3.3 Class A roof assemblies. Class A roof assemblies and roof coverings shall be listed and identified as Class A when tested in accordance with ASTM E108 or UL 790 by an approved testing agency.

502.4 Intersections.

502.4.1 Intersection of different International Wildland-Urban Interface Code construction classes.

The intersection of different *International Wildland-Urban Interface Code* construction classes, as identified in Section 301, shall be protected with materials compliant with the more stringent class.

502.4.2 Intersection of different construction elements within the same International Wildland-Urban Interface Code construction class.

The intersection of different construction elements within the same *International Wildland-Urban Interface Code* Construction class shall conform to the requirements listed within each *International Wildland-Urban Interface Code* Construction classification section.

502.5 Minimum required ember protection.

502.5.1 Exterior walls. Exterior walls at the intersection with grade, balconies, decks and roofs shall be protected from ignition caused by ember accumulation in accordance with one or both of the following:

1. Weather-exposed surface of noncombustible materials or metal flashing, extending a minimum of 6 inches (152 mm) vertically.
2. A minimum of 6 inches (152 mm) noncombustible vertical separation between horizontal surfaces and weather-exposed surfaces shall be maintained.

502.5.2. Gaps. Gaps shall not exceed 1/8 inch (3.2 mm) between exterior doors and door openings at the bottom, sides and tops of doors.

502.5.3. Exterior doors. Exterior doors and door frames shall resist ignition from the accumulation of embers.

502.5.4. Operable skylights. Operable skylights shall be protected by noncombustible corrosion-resistant mesh not to exceed 1/16 inch.

502.5.5. Skylight design criteria. Skylights shall be designed and constructed to resist ignition from the accumulation of embers and the glazing shall not be plastic.

❖ The roof-to-skylight interface creates an ember accumulation condition. If the skylight frame is combustible, or has exposed combustible materials (e.g., wood), metal flashing can be used to resist ignition from accumulated embers. Skylights are located through roofs, which makes them nearly horizontal surfaces and thus potential ember accumulators. Dome skylights are typically made of plastic material which is susceptible to penetration from embers.

SECTION 503 WILDFIRE HAZARD AREA (WHA) CLASS 1

❖ Exposure based on Chapter 3 requirements

- Direct flame contact assumes nonconforming defensible space that results in combustibles (vegetation, sheds, fences, etc.) in close proximity to the applicable building that if ignited will cause direct flame contact with the applicable building.
- Radiant heat: assumes nonconforming defensible space that results in burning fuels within proximity to cause radiant heating (but not necessarily direct flame contact).
- Embers: direct (landing on building; entering building through openings) and indirect (spot fires and or igniting combustibles causing radiant heat and/or direct flame contact).

503.1 Roof assembly.

503.1.1. Rating. Roofs shall have a Class A rated roof assembly 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 fire blocked to resist entry of flames or embers or have one layer of cap sheet complying with ASTM D3909 installed over the combustible roof deck.

503.1.2 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 mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

503.2 Eaves and soffits. Eaves and soffits shall be in accordance with Sections 503.2.1 through 503.2.3.

503.2.1 Acceptance criteria. Where provided, eaves and soffits shall comply with ASTM E2957 and meet all the following acceptance criteria:

1. Absence of flame penetration of the eaves at any time.
2. Absence of structural failure of the eave's subassembly at any time.
3. Absence of sustained combustion of any kind at the conclusion of the 40-min test.

503.2.2 Intersections. Eave and soffit intersections with exterior walls shall meet the requirements of 503.7.1.

503.2.3 Construction. For roof assemblies where the profile allows a space between the roof covering and roof deck, the space at the eave ends shall be constructed 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.

503.3 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.

503.4 Exterior walls. Exterior walls shall be in accordance with Sections 503.4.1 through 503.4.3.

503.4.1 Fire-resistance rating. Exterior wall assemblies shall have a fire-resistance rating of not less than 1 hour as determined in accordance with Section 502.3.1. Continuity of the 1-hour fire-resistance rating shall be maintained from the foundation to the eaves and soffits addressed in Section 503.2.

503.4.2 Intersections. Exterior wall to eave and soffit intersections shall meet the requirements of Section 503.7.1.

503.4.3 Coverings. Exterior wall coverings shall be constructed using one of the following methods:

1. Components of the exterior wall coverings shall be of noncombustible material in accordance with Section 502.2.1 Exterior surface of exterior sheathing shall have a flame-spread index not more than 25. Gaps or openings at base of wall covering (such as a rainscreen) shall be protected with noncombustible corrosion-resistant mesh with openings a minimum of 1/16 inch (1.6 mm) and not larger than 1/8 inch (3.2 mm) or be designed and approved to prevent flame or ember penetration into the cavity.

Exception: Wall coverings where the water-resistive barrier is the only combustible component and has water-resistive barriers having a peak heat release rate of less than 150 kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723.

2. Exterior wall assemblies that are tested in accordance with and comply with the acceptance criteria of NFPA 285.

503.5 Exterior opening protection.

503.5.1 Doors. Exterior doors shall have a fire protection rating of not less than 45 minutes. Windows within doors and glazed doors shall be in accordance with Section 503.5.2.

Exceptions:

1. Vehicle access doors.
2. Doors protected by *approved* fire-resistant-rated shutters. The fire-resistant shutter shall be not less than 45-minute rated and meet all the following requirements:
 - 2.1. Protect the entire window or door assembly including framing and glazing.
 - 2.2. Consist of noncombustible material.
 - 2.3. Be fixed to the building and be nonremovable.
 - 2.4. Be capable of being closed manually from either inside or outside or be motorized shutter systems that are not reliant on main power to close (note: if power-assisted shutter systems are used, that system must be powered with continuous backup energy, such as a battery system).
 - 2.5. When in the closed position, have gaps not greater than 1/8 inch (3.2 mm) between the shutter and the wall, frame and sill.
 - 2.6. Where perforated, have uniformly distributed perforations with a maximum aperture of 1/8 inch (3.2 mm) and a perforated area not greater than 20 percent of the shutter.

503.5.2 Windows. Exterior windows, window walls, glazed doors, windows within exterior doors and skylights shall have a fire protection rating of not less than 45 minutes.

Exception: Windows protected by *approved* fire-resistant-rated shutters. The fire-resistant shutter shall be not less than 45-minute rated and meet the following requirements:

1. Protect the entire window or door assembly including framing and glazing.
2. Consist of noncombustible material.
3. Be fixed to the building and be nonremovable.
4. Be capable of being closed manually from either inside or outside or be motorized shutter systems that are not reliant on main power to close (note: if power-assisted shutter systems are used, that system must be powered with continuous backup energy such as a battery system.)
5. When in the closed position, have gaps not greater than 1/8 inch (3.2 mm) between the shutter and the wall, frame or sill.
6. Where perforated, have uniformly distributed perforations with a maximum aperture of 1/8 inch (3.2 mm) and a perforated area not greater than 20 percent of the shutter.

503.5.3 Ventilation opening protection. Attic, foundation or underfloor ventilation openings shall be protected and constructed in accordance with Sections 503.5.3.1 and 503.5.3.2.

503.5.3.1 Vents. Attic, foundation or underfloor ventilation openings shall be fully covered with approved vents tested in accordance with ASTM E2886 and shall demonstrate compliance with all the following requirements:

1. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
2. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
3. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).

503.5.3.2 Ventilation opening locations. Ventilation openings shall be located in accordance with the following:

1. Attic ventilation openings located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas shall comply with the performance requirements in Section 503.5.3.1 and shall have a minimum 1-hour fire-resistance rating when tested in accordance with ASTM E119 or UL 263.
2. Gable end and dormer vents shall be located not less than 10 feet (3048 mm) from lot lines or shall have a minimum 1-hour fire-resistance rating when tested in accordance with ASTM E119 or UL 263.
3. Underfloor ventilation openings shall be located as close to grade as practical.

503.5.4 Intersections.

Intersections of exterior openings with exterior walls shall meet the requirements of Section 503.7.

503.6 Underfloor areas.

Underfloor areas of buildings and structures shall be enclosed to the ground with exterior walls in accordance with Section 503.4.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected in accordance with Section 503.4.

503.7 Joints and intersections.

503.7.1. Protection. Except as provided in Sections 503.7.2, 503.7.3, 503.7.4 and 503.7.5, joints and intersections of different construction elements and joints within construction elements shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a period of not less than 1 hour. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E1966 or UL 2079.

503.7.2. Intersections. Intersections of exterior horizontal assemblies to exterior vertical assemblies, such as soffits to exterior walls, eaves to exterior walls or floor projections to exterior walls, shall be tested in accordance with ASTM E2957. Fire penetration through the exterior horizontal surfaces, exterior vertical surfaces or intersections shall not occur during the test and sustained combustion beyond the exterior surfaces shall not be present at the end of the test. The test specimen, including the exterior horizontal assembly, the exterior vertical assembly and the intersection, shall be representative of the construction that the test is intended to assess as to materials, workmanship and details such as dimensions of parts, and shall be built under conditions representative of those applied in building construction and operation. The physical properties of the materials and components used in the test specimen shall be determined and recorded.

503.7.3. Gaps around vents. Gaps around vents shall be sealed with sealants in accordance with vent manufacturer installation instructions to avoid flame intrusion through the gaps.

503.7.4. Control joints. Where provided, control joints shall not exceed a maximum width of 0.625 inch (15.9 mm) and shall achieve a 1-hour fire-resistance rating when tested as part of an assembly in accordance with ASTM E119 or UL 263.

503.7.5. Gaps around doors. Gaps around rated doors and windows shall be sealed with sealants in accordance with door or window manufacturer installation instructions to avoid flame intrusion through the gaps.

503.8 Attached accessory structures.

❖ Examples of unenclosed attached accessory structures include decks and pergolas. Accessory structures have the same/similar vulnerability to direct embers as a primary structure, and so should resist ignition in the same manner to reduce the potential of generating additional exposure.

503.8.1. Rating. Unenclosed accessory structures attached to buildings with habitable spaces and projections, 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.

Exception: Coated materials shall not be used as the walking surface of decks.

503.8.2 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 504.4.

SECTION 504 WILDFIRE HAZARD AREA (WHA) CLASS 2

❖ Exposure based on Chapter 3. This WHA class assumes conforming defensible space that is subject to radiant heat and embers.

504.1 Roof assembly.

504.1.1. Rating. 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 fire stopped to preclude entry of flames or embers or have one layer of cap sheet complying with ASTM D3909 installed over the combustible roof deck.

504.1.2 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.

504.2 Eaves and soffits. 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.

504.3 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.

504.4 Exterior Walls. Exterior walls shall be constructed with one of the exterior wall assemblies described in Sections 504.4.1 through 504.4.3. Such assemblies shall extend from the top of the foundation to the underside of the roof sheathing or eaves or soffits compliant with Section 504.2:

504.4.1. Acceptance criteria. Exterior wall assemblies that pass the following acceptance criteria when tested in accordance with ASTM E2707:

The ASTM E2707 test shall be conducted on a minimum of three test specimens and meet the conditions of acceptance in Items 1 and 2 below. If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be performed. All three additional tests must meet the conditions of acceptance.

1. Absence of flame penetration through the wall assembly at any time.

2. Absence of evidence of glowing combustion on the interior surface of the assembly at the end of the 70-minute test.

504.4.2. Rating. Exterior wall assemblies with a minimum fire-resistance rating of 1 hour, rated for exposure on the exterior side and protected with one of the following exterior wall coverings:

1. Noncombustible materials.
2. Fire-retardant-treated wood.
3. Ignition-resistant building materials.

504.4.3. Log wall rating. Log walls that meet the requirements of a 1-hour fire-resistant rating in accordance with Section 303 of ICC 400.

504.5 Exterior opening protection.

504.5.1 Doors. Exterior doors shall be approved noncombustible 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 504.5.2.

Exception: Vehicle access doors.

504.5.2 Windows. Exterior windows, window walls, 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.

504.5.3 Ventilation opening protection. Attic, foundation or underfloor ventilation openings shall be protected in accordance with Section 504.5.3.1.

504.5.3.1 Vents. Attic, foundation or underfloor ventilation openings shall be fully covered with approved vents tested in accordance with ASTM E2886 and shall demonstrate compliance with the following requirements:

1. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
2. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
3. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).

504.5.3.2 Ventilation opening 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.

504.5.4 Intersections. Intersections of exterior openings with exterior walls shall meet the requirements of Section 504.7.

504.6 Underfloor areas. Buildings or structures shall have underfloor areas enclosed to the ground, with exterior walls in accordance with Section 504.4.

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected in accordance with Section 504.4.

504.7 Joints and intersections.

504.7.1. Protection. For assemblies that meet Section 504.4.1, no additional joint protection is required if the assembly tested in accordance with ASTM E2707 includes joints and intersections as used in the construction. If joints were not provided in tested assemblies, joints and intersections shall comply with Section 503.7.1

504.7.2. Exterior walls. For exterior walls meeting Section 504.4.2, joints and intersections shall comply with Section 503.7.1.

504.7.3. Exterior log walls. For exterior log walls meeting Section 504.4.3, joints shall meet the requirements of Section 303 of ICC 400.

504.7.4. Gaps around vents. Gaps around vents shall be sealed with sealants in accordance with vent manufacturer installation instructions to avoid flame intrusion through the gaps.

503.7.5. Gaps around doors. Gaps around rated doors and windows shall be sealed with sealants in accordance with door or window manufacturer installation instructions to avoid flame intrusion through the gaps.

504.8 Attached accessory structures.

❖ Examples of unenclosed attached accessory structures include decks and pergolas. Accessory structures have the same/similar vulnerability to direct embers as a primary structure, and so should resist ignition in the same manner to reduce the potential of generating additional exposure.

504.8.1. Rating. Unenclosed accessory structures attached to buildings with habitable spaces and projections, 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.

Exception: Coated materials shall not be used as the walking surface of decks.

504.8.2 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 504.4.

SECTION 505

WILDFIRE HAZARD AREA (WHA) CLASS 3

❖ Assumed exposure based on Chapter 3. Direct ember ignitions are those when an ember ignites a building material and contents via conduction and/or radiation. Direct Ember-Resistance classification assumes no radiant heat or direct flame exposure from exterior fire, and "perfectly" maintained defensible space (including on building). These are the base requirements for all buildings being designed to resist wildland-urban fire exposures.

505.1 Roof assembly.

505.1.1. Rating. 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.

505.1.1.1. Fire block. For roof assemblies where the profile allows a space between the roof covering and roof deck, the space at the eave ends shall be fire blocked to resist entry of embers or have one layer of cap sheet complying with ASTM D3909 installed over the combustible roof deck.

505.1.2 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.

505.2 Eaves and soffits.

505.2.1. Construction. Eaves and soffits shall be designed and constructed to resist the accumulation of embers in gaps between construction materials (e.g., rafters and blocking) that can lead to ignition.

505.2.2. Openings. Ventilation openings in eaves and soffits shall comply with Section 506.6.3.

505.3 Gutters and downspouts.

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

505.4 Exterior walls.

Exterior walls at the intersection with grade, balconies, decks and roofs shall be protected from ignition caused by ember accumulation in accordance with one or both of the following:

1. Weather-exposed surface of noncombustible materials or metal flashing, extending a minimum of 6 inches (152 mm) vertically.
2. A minimum of 6 inches (152 mm) noncombustible vertical separation between horizontal surfaces and weather-exposed surfaces shall be maintained.

❖ Table of Classes and Requirements:

WUI 1	WUI 2	WUI 3
1-hour rated assembly AND NC Wall Coverings (with WRB exception) AND Protection of rainscreens/openings	ASTM E2707-compliant assembly	Ember Protection: 6" min.
OR	OR	
NFPA 285-compliant assembly	1-hour rated assembly AND 1. NC or 2. FRTW or 3. IR	
	OR	
	Log walls per Section 303 of ICC-400	

NC = noncombustible, FRTW = fire-retardant-treated wood, IR = ignition resistant.

505.5 Exterior opening protection.

505.5.1 Doors.

❖ This section covers all exterior doors, including pedestrian, vehicle (e.g., garage), and utility (e.g., crawl space).

505.5.1.1. Gaps. Gaps shall not exceed 1/8 inch (3.2 mm) between exterior doors and door openings, at the bottom, sides and tops of doors.

505.5.1.2. Exterior doors. Exterior doors and door frames shall resist ignition from the accumulation of embers.

❖ Exterior doors may contain components (e.g., weather strip) that are combustible and susceptible to ignition from the accumulation of embers.

505.5.2 Windows.

❖ This section covers all exterior windows, including casement, hung and louvered. Gaps around windows, which are vulnerable to embers, are addressed for other performance reasons (e.g., energy code).

505.5.2.1. Screen. Operable parts of the window (i.e., where it can open) shall be covered with a noncombustible and corrosion-resistant screen with openings not to exceed 1/16 inch (1.6 mm).

505.5.2.2. Embers. Exterior windows shall be designed and constructed to resist ignition from the accumulation of embers.

505.5.3 Ventilation opening protection. Attic, foundation or underfloor ventilation openings shall be protected in accordance with Section 504.5.3.1.

505.5.3.1 Vents. Attic, foundation or underfloor ventilation openings shall be fully covered with in accordance with one of the following:

1. Listed vents tested in accordance with ASTM E2886 to resist the intrusion of embers, and there shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
2. Noncombustible, corrosion-resistant vents with mesh openings not to exceed 1/8 inch (3.2 mm).

505.5.4 Intersections.

Intersections of exterior openings with exterior walls shall meet the requirements of Section 505.7.

505.6 Underfloor enclosure. Buildings or structures, appendages and projections shall have underfloor areas enclosed to the ground with exterior walls in accordance with section 506.4 or with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm).

Exception: Complete enclosure shall not be required where a minimum of 6 inches (152 mm) of metal flashing or noncombustible material is applied vertically on the exterior of the vertically aligned structural elements such as columns and supporting walls at the ground.

505.7 Joints and intersections.

505.7.1. Ember protection. Joints and intersections that would be susceptible to accumulation of embers shall be protected per Section 503.7.

505.7.2. Gaps around vents. Gaps around vents shall be sealed with sealants in accordance with vent manufacturer installation instructions to avoid flame intrusion through the gaps.

505.7.3. Gaps around rated doors and windows. Gaps around rated doors and windows shall be sealed with sealants in accordance with door or window manufacturer installation instructions to avoid flame intrusion through the gaps.

505.8 Attached accessory structures. Unenclosed accessory structures and projections attached to the building shall have underfloor areas enclosed to the ground in a manner that complies with Section 506.5.

❖ Examples of unenclosed attached accessory structures include decks and pergolas. Accessory structures have the same/similar vulnerability to direct ember as a primary structure, and so should resist ignition in the same manner to reduce the potential of generating additional exposure.

SECTION 506 DETACHED ACCESSORY STRUCTURES

506.1. General. Detached accessory structures shall be constructed in accordance with one of the methods described in Sections 506.2 through 506.4, based on the distance requirements outlined in Table 301.2.2.

506.2 Class 1 detached accessory structures.

506.2.1. Floor area not exceeding 200 square feet. Class 1 detached accessory structures with a floor area not exceeding 200 square feet (19 m²) shall be constructed on all sides in accordance with Section 503.

506.2.2. Floor area exceeding 200 square feet. Class 1 detached accessory structures with a floor area greater than 200 square feet (19 m²) shall be constructed on the sides adjacent to the building containing habitable space in accordance with Section 503.

506.3 Class 2 detached accessory structures.

506.3.1. Floor area not exceeding 200 square feet. Class 2 detached accessory structures with a floor area not exceeding 200 square feet (19 m²) shall be constructed on all sides in accordance with Section 504.

506.3.2. Floor area exceeding 200 square feet. Class 2 detached accessory structures with a floor area greater than 200 square feet (19 m²) shall be constructed on the sides adjacent to the building containing habitable space in accordance with Section 504.

506.4 Class 3 detached accessory structures located 50 feet or more from main structure.

506.4.1. Floor area not exceeding 200 square feet. Class 3 detached accessory structures with a floor area not exceeding 200 square feet (19 m²) shall be constructed on all sides in accordance with Section 505.

506.4.2. Floor area exceeding 200 square feet. Class 3 detached accessory structures with a floor area greater than 200 square feet (19 m²) shall be constructed on the sides adjacent to the building containing habitable space in accordance with section 505.

DRAFT

CHAPTER 6 EXISTING BUILDINGS

SECTION 601 SCOPE

601.1 Scope.

The provisions of this chapter shall apply to the repair, alteration, addition to, change of occupancy or maintenance of existing buildings located within or relocated to wildfire hazard areas.

SECTION 602 GENERAL

602.1 General.

The provisions of this chapter are intended to permit work in existing buildings that is consistent with the purpose of this standard. Compliance with these provisions shall be deemed to meet the requirements of this standard.

602.2 Classification of work.

For purposes of this standard, work in existing buildings shall be classified into the categories of repair, alteration, addition, change of occupancy, relocation or maintenance. Specific requirements are established for each category of work in these provisions.

602.3 Compliance.

602.3.1. Scope. Regardless of the category of work being performed, the work shall cause the relevant building element or assembly to be compliant, with the provisions of this standard.

602.3.2. Requirements. The work shall comply with the requirements of Chapter 3.

SECTION 603 REPAIRS

603.1 General.

Repairs to existing structures shall comply with the requirements of this section.

603.2 Building elements and materials.

603.2.1. General. Materials used during *repairs* shall comply with this section.

603.2.1.1 New and replacement materials. Except as otherwise required or permitted by this standard, materials permitted by this standard for new construction shall be used.

603.2.1.2 Existing materials. Materials already in use in a *building* in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the *code official* to be unsafe.

603.2.2 Exterior wall covering replacement.

603.2.2.1. Removal. Exterior wall covering replacement for walls needing to comply with Section 503.4 shall include the removal of all existing layers of wall coverings down to the exterior sheathing and replacement shall include the following:

1. Type X exterior gypsum sheathing 5/8 inches (16 mm) in thickness.

Exception: Where the existing wall assembly includes an exterior layer of 5/8-inch (16 mm) Type X gypsum sheathing and the existing sheathing is not water-soaked or deteriorated.

2. Wall coverings of noncombustible material in accordance with Section 502.2.1.

Exception: Wall coverings where the water-resistive barrier is the only combustible component and has water-resistive barriers having a peak heat release rate of less than 150 kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723.

3. Approved design tested and complying with the requirements of NFPA 285 where the existing assembly is not water-soaked or deteriorated.

603.2.2.2. Removal of assembly. Unless the existing exterior wall assembly is shown to comply with provisions of Section 504.4, exterior wall covering replacement for walls needing to comply with Section 504.4 shall include the removal of all existing layers of wall coverings down to the exterior sheathing and replacement shall include the following.

Exception: Approved and tested design complying with Section 504.4 where the existing assembly is not water-soaked or deteriorated.

1. Type X exterior gypsum sheathing 5/8 inches (16 mm) in thickness.

Exceptions:

1. Where the existing wall assembly includes an exterior layer of 5/8-inch (16 mm) Type X exterior gypsum sheathing and the existing sheathing is not water-soaked or deteriorated.
2. Log walls that meet the requirements of a 1-hour fire-resistance rating in accordance with Section 303 of ICC 400.
2. Wall coverings shall include exterior surfaces of one of the following materials:
 - 2.1. Noncombustible materials.
 - 2.2. Fire-retardant-treated wood.
 - 2.3. Ignition-resistant building materials.

Exception: Log walls in accordance with Section 303 of ICC 400.

3. A wall designed and tested in accordance with ASTM E2707 and meeting the requirements of Section 504.4.1 where the existing assembly is not water-soaked or deteriorated.

603.2.2.3. Replacement. For exterior wall covering replacement for walls needing to comply with Section 505.4, the intersections with grade, balconies, decks and roofs shall be protected from ignition caused by ember accumulation in accordance with one or both of the following:

1. Weather-exposed surface of noncombustible materials or metal flashing, extending a minimum of 6 inches (152 mm) vertically.
2. A minimum of 6 inches (152 mm) noncombustible vertical separation between horizontal surfaces and weather-exposed surfaces shall be maintained.

SECTION 604 ALTERATIONS

604.1 General. Alterations to existing buildings shall comply with the provisions of this standard for new construction, except as permitted by Sections 604.2 through 604.5. Alterations shall not cause the existing building to become less compliant with the provisions of this standard for new construction than the existing building was prior to the work.

604.2 Newly constructed elements. Newly constructed elements, components and systems shall comply with the requirements of this standard for new construction.

604.3 Nonconformities. The work shall not increase the extent of noncompliance or create nonconformity to those requirements that did not previously exist.

SECTION 605 ADDITIONS

605.1. General. All building elements in any addition shall comply with this standard.

SECTION 606 CHANGE OF USE OR OCCUPANCY

606.1. General. Any change of use to bring a structure within the scope of *the International Residential Code* shall require compliance with this standard.

SECTION 607 RELOCATION

607.1. General. Any structure relocated into a wildfire hazard area shall comply with this standard.

SECTION 608 INSPECTION AND MAINTENANCE

608.1 General. Inspection of existing structures shall be performed regularly in accordance to this section. Any repairs that become necessary shall become compliant with the requirements outlined in Section 603.

608.2 Building elements and materials. Repair of any building materials shall meet the requirements as prescribed in Chapter 5 for new construction according to the *International Wildland-Urban Interface Code* class in which the building is located.

608.3 Inspection and maintenance of existing buildings.

608.3.1 Roof assemblies. Inspect the exterior envelope of various roof components and details (e.g., edge of roof, around fire-rated or protected vents, open eave rafters, or joist blocking details). If the roof assembly's construction does not conform with the requirements of roof assembly provided in this standard, it shall be repaired in accordance with Section 603.

608.3.2 Joints and interfaces. Inspect joints and interfaces (e.g., door-to-wall, window-to-wall, wall-to-wall, roof-to-roof joints) for the accumulation of combustible debris. If debris is present, remove.

608.3.2.1. Caulking. Seal cracks and gaps with fire-resistant caulking, in particular combustible or non-fire-rated joints, to prevent creating areas where vegetative debris and embers can accumulate.

608.3.3 Adjacent to roof-to-wall siding interfaces.

608.3.3.1. Inspection. Inspect roof-to-wall joints and interfaces in the roof envelope. Inspect areas where vegetative debris and embers could accumulate. Inspect adjacent combustible dormer or wall siding adjacent to roofing material. If debris is present, remove.

608.3.3.2. Sealant. Seal cracks and gaps with fire-resistant caulking, in particular combustible or non-fire-rated joints, to prevent creating areas where vegetative debris and embers can accumulate.

608.3.4 Roof joints at through penetrations (chimneys, skylights, roof vents).

608.3.4.1. Inspection. Inspect all roof joints at through penetrations such as chimneys, skylights and roof vents. Ensure the joint at the penetration and the roof assembly is well sealed to minimize the entry of embers.

608.3.4.2. Flashing. Check for standard metal flashing and that no exposed wood is present, repair as necessary. Metal flashing installed around penetration shall not be corroded, torn or loose.

608.3.4.3. Replacement. Replace if necessary.

608.3.4.4. Debris. Remove vegetative debris from the roof, including on and adjacent to skylights, on a regular basis.

608.3.5 Roof-to-roof interfaces (ridges).

608.3.5.1. Inspection. Inspect roof caps that also serve as attic ventilation (e.g., underlying ridge vents).

608.3.5.2. Vent protection. Ensure that these ridge vents are provided with ember and flame-resistant vent protection. Where roof caps do not serve as attic ventilation, ensure that any gaps are sealed.

608.3.5.3. Gaps. For roof ridge edges or terminations, ensure any gaps are filled with a noncombustible material.

608.3.6 Roof-to-roof interfaces (valleys).

608.3.6.1. Inspection. Inspect roof valley joints with metal valley flashing with an underlying mineral surfaced cap sheet incorporated into the assembly.

608.3.6.2. Condition. Metal flashing installed in valley joints shall not be corroded, torn or loose.

608.3.6.3. Replacement. Replace if necessary.

608.3.7 Edge-of-roof joints.

608.3.7.1. Inspection. Inspect edge-of-roof joints for gaps or cracks.

608.3.7.2. Gaps. Plug gaps at the roof edge.

608.3.7.3. Caulking. Seal cracks and gaps with fire-resistant caulking.

608.3.8 Head-of-wall joints.

608.3.8.1. Inspection. Inspect joints between the head of wall and roof or ceiling for gaps or cracks.

608.3.8.2. Caulking. Seal cracks and gaps with fire-resistant caulking.

608.3.9 Bottom-of-wall-to-roof joints.

Inspect joints between bottom of wall and roof for gaps or cracks.

608.3.10 Wall-to-wall joints.

608.3.10.1. Inspection. Inspect wall-to-wall joints for gaps or cracks.

608.3.10.2. Caulking. Seal cracks and gaps with fire-resistant caulking.

608.3.11 Window-to-wall joints.

608.3.11.1. Inspection. Inspect window-to-wall joints for gaps or cracks.

608.3.11.2. Sealant. Ensure the space between the door and the framing is well sealed.

608.3.11.3. Caulking. Seal cracks and gaps with fire-resistant caulking.

608.3.12 Door-to-wall joints.

608.3.12.1. Inspection. Inspect door-to-wall joints for gaps or cracks.

608.3.12.2. Sealant. Ensure the space between the door and the framing is well sealed.

608.3.12.3. Gaps. The gaps around the openings should be filled with fire-resistant caulking, mineral wool or similar noncombustible material.

608.3.13 Garage-door-to-wall joints.

608.3.13.1. Inspection. Inspect garage-door-to-wall joints for gaps or cracks. Ensure that the space between the garage door, framing and concrete slab is well sealed to minimize the entry of embers. Ensure weather sealing is provided and in good condition.

608.3.13.2. Sealant. Ensure the space between the door and the wall is well sealed.

608.3.13.3. Gaps. Where gaps are present, utilize appropriate weatherstripping, firestopping and/or fire-resistant penetration materials/products as needed. Replace weather sealing materials if necessary, firestopping and/or fire-resistant penetration materials/products as needed. Replace weather sealing materials if necessary.

608.3.14 Wall expansion joints.

608.3.14.1. Inspection. Inspect wall expansion joints.

608.3.14.2. Sealant. Ensure the space between the expansion joints is well sealed.

608.3.13.3. Gaps. Gaps in expansion joints should be filled with fire-resistant caulking, mineral wool or similar noncombustible material.

608.3.16 Bottom-of-wall-to-foundation joints.

608.3.16.1. Inspection. Inspect bottom-of-wall-to-foundation joints.

608.3.16.2. Sealant. Ensure the space between the joints is well sealed.

608.3.16.3. Firestopping. Block or seal gaps in with firestopping materials (e.g., mineral wool, fire resistant caulking, or other fire-rated sealants).

608.3.17 Floor-to-wall joints.

608.3.17.1. Inspection. Inspect floor-to-wall joints such as where balconies, decks and porches interface with the exterior wall envelope.

608.3.17.2. Sealant. Ensure the space between the building feature and wall is well sealed.

608.3.17.3. Gaps. Block or seal gaps with appropriate firestopping and fire caulking material.

608.3.18 Gutters and downspouts.

608.3.18.1. Inspection. Inspect rain gutters that interface with the exterior wall envelope and ensure that gutters are properly secured to fascia to eliminate gaps where vegetative debris, leaves or needles can accumulate. Ensure that leaves, pine needles and other debris are removed from the rain gutters themselves and removed from gaps between the back of the gutter and the fascia. Remove vegetative debris from gutters on a regular basis during fire season.

608.3.18.2. Gaps. Ensure that there are no gaps between the rain gutter and fascia.

608.3.18.3. Caulking. If necessary, more securely fasten or secure any sections of the rain gutter that have separated from the fascia. If that is not possible, block or seal gaps with appropriate fire caulking material.

608.3.19 Ventilation opening protection.

608.3.19.1. Inspection. Inspect vents (gable vents, dryer vents, crawl space vents) to make sure they are in good condition (e.g., screen is in good condition with no tears that would result in larger openings).

608.3.19.2. Replacement. If necessary, replace the screen or vent with materials conforming to Chapter 5.

608.3.20 Fences.

608.3.20.1. Inspection. Inspect fences for the accumulation of vegetative debris, both on and below the fence.

608.3.20.2. Debris. Remove vegetative debris that can accumulate at the base of the fence on a regular basis. Do not use fences as a trellis for plants because plants can create and trap ignitable vegetative debris.

608.3.21 Solar panels.

608.3.21.1. Inspection. Inspect solar panels for the accumulation of vegetative debris, both on top of and below the panel and its support framing.

608.3.21.2. Debris. Remove vegetative debris that has accumulated on top of and below the solar panels and support structures.

608.3.22 Decks, stairs, and landings attached to structure.

608.3.22.1. Inspection. Inspect the gaps between decks, stairs, landings, etc. and the structure to ensure that no vegetative debris has accumulated in the gap.

608.3.22.2. Debris. Remove vegetative debris that has accumulated in the gap.

608.3.22.3. Gaps. Block or seal gaps with appropriate firestopping and fire caulking material.

608.3.23 Pergolas and trellises.

608.3.23.1 Inspection. Inspect pergolas and trellises for the accumulation of vegetative debris, both on and below the pergola and trellis.

608.3.23.2 Debris. Remove vegetative debris that has accumulated on the pergola or trellis on a regular basis. Do not intentionally use pergolas or trellises as a support for plants because plants can create and trap ignitable vegetative debris.

608.3.24 Exterior wall bump outs.

608.3.24.1. Inspection. Inspect the top and bottom of any bump out features on exterior walls. Inspect for gaps between the bump out and the main structure.

608.3.24.2. Debris. Remove vegetative debris that has accumulated on the top of the bump out.

608.3.24.3. Gaps. Block or seal gaps on the top and bottom of the bump out with appropriate firestopping and/or fire caulking material.

DRAFT

CHAPTER 7 REFERENCED STANDARDS

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 Bar Harbor Drive, P.O. Box C700 West
Conshohocken, PA 19428-2959

ASTM D2898-10(2017):

Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing

ASTM D3909-22:

Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules

ASTM D6662-22:

Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards

ASTM D7032-21:

Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards and Handrails

ASTM E84-23d:

Standard Test Method for Surface Burning Characteristics of Building Materials

ASTM E108-20a:

Standard Test Methods for Fire Tests of Roof Coverings

ASTM E119-24:

Standard Test Methods for Fire Tests of Building Construction and Materials

ASTM E136-24a:

Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C

ASTM 1354-23:

Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter

ASTM E2652-22:

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

ASTM E2768-11(2018):

Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)

ASTM E2886-20:

Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingement

ICC

International Code Council
2200 Massachusetts Ave, NW Suite 250
Washington, DC 20001

IBC-24:

International Building Code

IEBC-24:
International Existing Building Code

IFC-24:
International Fire Code

IRC-24:
International Residential Code

IWUIC-24:
International Wildland-Urban Interface Code

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

NFPA 13 - 2022
Standard for the Installation of Sprinkler Systems

NFPA 285 - 2023
Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies
Containing Combustible Components

NFPA 286 - 2024
Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room
Fire Growth

NFPA 1140 - 2022
Standard for Wildland Fire Protection

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

UL 263-2022:
Standard for Fire Tests of Building Construction and Materials

UL 723-2023:
Standard for Test for Surface Burning Characteristics of Building Materials

UL 790-2022:
Standard Test Methods for Fire Tests of Roof Coverings

**APPENDIX A
FIRE HAZARD SEVERITY**

A101.1 Fire hazard severity form. Table A101.1 or Table A101.2 contain some examples for analyzing the fire hazard severity of building sites.

**TABLE A101.1
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 or more	1__
Less than 20 feet	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 or greater	1__
Cul-de-sac turnaround	2__
Dead-end roads 200 feet or less in length	3__
Dead-end roads greater than 200 feet in length	5__
5. Street Signs	
Present	1__
Not present	3__
B. Vegetation (IWUIC Definitions)	
1. Fuel Types	
Light	1__
Medium	5__
Heavy	10__

**TABLE A101.1—continued
FIRE HAZARD SEVERITY FORM**

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 hydrant within 1,000 feet	1__
Hydrant farther than 1,000 feet 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+

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.79 L/m.

**TABLE A101.2
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. Per annum.

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

DRAFT