IWUIC

2024 GROUP A PROPOSED CHANGES TO THE I-CODES

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WUIC3-24

IWUIC: 403.4

Proposed Change as Submitted

Proponents: Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com)

2024 International Wildland Urban Interface Code

Revise as follows:

403.4 Marking of roads. *Approved* signs or other *approved* notices shall be provided ~~and maintained for access roads and *driveways* to identify such roads and prohibit the obstruction thereof~~ to identify access roads. Approved signs shall be provided to prohibit the obstruction of access roads and driveways serving more than one building or structure. Required signs and notices shall be maintained and legible.

Reason: This proposal is intended to clarify this section, and indicate that it is not required to provide signs at driveways.

This current section contains several requirements in one sentence:

1. Signs identifying access roads and driveways
2. Signs to prohibit obstruction of access roads and driveways
3. Maintenance of signs.

This proposal splits the components apart and modifies it so that:

1. Signs are required to identify access roads. Signs identifying driveways are not required.
2. Signs are required to prohibit obstruction of access roads. Such signs are not required for driveways unless they serve more than one building or structure.
3. The required signs and notices must be legible and maintained.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This proposal will reduce the cost by eliminating the requirements for signs on driveways, and "NO OBSTRUCTION" signs on driveways serving individual structures. The cost per project is estimated to be $100.

Estimated Immediate Cost Impact Justification (methodology and variables):

The cost is based on the purchase of an average of two 4 x 4 redwood posts, paint and labor.

WUIC3-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The intent is correct, but there is a conflict between the use of the defined term driveways and the number that is associated with it. In addition, there was objection to the use of the term structure in the requirement. (Vote: 11-2)

Individual Consideration Agenda

Comment 1:

IWUIC: 403.4, 403.4.1, 403.5 (New), 403.5.1 (New), 403.6, 403.5

Proponents: Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

403.4 Marking of roads. *Approved* signs ~~or other *approved* notices~~ shall be provided and maintained to identify access roads. ~~Approved signs shall be provided to prohibit the obstruction of access roads and driveways serving more than one building or structure. Required signs and notices shall be maintained and legible.~~

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

Add new text as follows:

403.5 Obstruction of access roads. Access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 403.3 shall be maintained at all times.

403.5.1 Marking. Where required by the code official, approved signs or other approved notices or markings shall be provided for access roads to prohibit the obstruction thereof. The signs or markings shall be maintained and be replaced or repaired when necessary to provide adequate visibility.

Revise as follows:

403.6 Address ~~markers~~identification. ~~Buildings shall have a permanently posted address, which~~New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where the address identification is located on the building and cannot be viewed from the access road, a monument, pole or other sign shall be placed at each *driveway* entrance and be visible from both directions of travel along the road to identify the building. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

~~403.5~~ 403.8 Marking of fire protection equipment. Fire protection equipment and fire hydrants shall be clearly identified in a manner *approved* by the *code official* to prevent obstruction.

Reason: This item was disapproved at CAH 1 for lack of specifics on signs and coordination between the driveway and access road requirements. This comments has taken those issues into account.

Section 403.4 is confusing because its title is “marking of roads”, but the first sentence states the requirements apply to roads and driveways. To provide clarity, the section is revised to address access roads because driveway provisions are included in Section 403.2.

The first sentence of Section 403.4 has been revised to reinsert the requirement to maintain access road signs. The second sentence is added to specify when the installation of road signs must occur and correlates with the road sign requirements in IFC Section

505.2. Section 403.4.1 contains the specifications for road signs in the WUI areas. The requirement to not obstruct the access roads is relocated from the second sentence in Section 403.4 to new Section 403.5. This new section correlates with IFC Section 503.4.

Section 403.5.1 is the relocated provision for signs from the third sentence in Section 403.4. This section has also been revised to correlate with language in IFC Section 503.3. Even though the language in the IFC is specific to obstruction of fire lanes, the concept is the same. The current language in the IWUIC allows the code official to require signs as needed to prohibit obstruction of access roads, and the language in the IFC allows the code official to require signs as needed to prohibit obstruction of fire lanes.

Section 403.6 is retitled Address identification and revised. The revised text is consistent with IBC Section 502.1 and IFC Section 505.1 and states that the address requirement applies to new and existing buildings, because both the IFC and the IBC apply to new and existing buildings. The lettering requirements are included to match the IFC/IBC.

Section 403.5 is relocated to 403.8 since it did not fit within the requirements for access road signs.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

This proposal will reduce the cost by eliminating the requirements for signs on driveways, and "NO OBSTRUCTION" signs on driveways serving individual structures.

Estimated Immediate Cost Impact Justification (methodology and variables):

The cost per project is estimated to be $100.

Comment (CAH2)# 696

WUIC11-24

IWUIC: G101.3.1

Proposed Change as Submitted

Proponents: Pierson Stoecklein, Frontline Wildfire Defense

2024 International Wildland Urban Interface Code

Delete without substitution:

~~**G101.3.1 Exterior sprinkler systems.** Currently, there is no nationally accepted standard for the design and installation of exterior fire sprinkler systems. Interior sprinkler systems are regulated by nationally recognized standards that have specific requirements. However, exterior sprinkler systems lack such uniformity. What is generally proposed is a type of sprinkler system, placed on the roofs or eaves of a building, whose primary purpose is to wet down the roof. These types of systems can be activated either manually or automatically. However, the contemporary thought on exterior sprinkler systems is that if the roof classification is of sufficient fire resistance, exterior sprinklers are of little or no value. Another option and alternative with exterior sprinklers is to use them to improve the relative humidity and fuel moisture in the *defensible space*. In this case, the exterior sprinkler is not used to protect the structure as much as it attempts to alter the fuel situation. However, studies do not support the idea that merely spraying water into the air in the immediate vicinity of a rapidly advancing wildland-urban fire does much good. Clearly, irrigation systems that keep plants healthy and fire-resistive plants that resist convection and radiated heat can accomplish the same purpose.~~

Reason: Outdated and inaccurate.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The proposed modifications incorporate an exterior wildfire sprinkler system into the code as optional equipment that can be installed on a structure at the discretion of the owner/s and the local code official. Because installation is not mandated, nor do the proposed modifications alter any construction requirements, the proposed modifications have no cost impact.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval of the proposal was that if something is being proposed to be deleted completely out of an appendix because there are specific issues with it, updated information related to the exterior sprinkler systems should be presented in the reason statement. (Vote: 13-0)

Individual Consideration Agenda

Comment 1:

IWUIC: G101.3.1

Proponents: Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

G101.3.1 Exterior wildfire sprinkler systems. Exterior wildfire sprinkler systems are designed to protect the structure and adjacent defensible space from flying embers. Exterior wildfire sprinkler systems consist of piping and devices arranged to discharge water, or a fire-extinguishing agent, on the exterior surfaces of a structure and the adjacent defensible space to pre-wet, hydrate and inhibit ignition from flying embers. Currently, there is no national standard for the design and installation of exterior wildfire sprinkler systems, however, there have been numerous installations which have proven their effectiveness in protecting against flying embers. A typical exterior wildfire sprinkler system has distribution piping with discharge devices located along the roof ridges and eaves, and possibly additional devices that are landscape mounted. These systems can be activated either manually or automatically. The advantages of exterior wildfire sprinkler systems is they increase the fuel moisture within the defensible space, and wet furniture, appliances, toys, etc. that the property owner has located within the defensible space. The IWUIC regulates the structure and permanent components within the defensible space, but there are many transient items that move in and out of the defensible space which are not regulated, especially at a residential structure. In those instances, the exterior wildfire sprinkler system is not only protecting the structure, it also alters the entire fuel load within the defensible space by wetting the furniture, umbrellas and any other items placed there by the homeowner.
Studies have shown that flying embers can travel miles ahead of the flame front during a wildfire. Exterior wildfire sprinkler systems are very effective in mitigating the ignition from these embers. Exterior wildfire sprinkler systems are not designed to fight the flame front as it crosses the property line and direct flame contact hits the structure; however, their effectiveness in protecting against flying embers has been clearly demonstrated.

Reason: The original proposal indicated that the language in the appendix was outdated and therefore should be deleted. While it is outdated, it should not be deleted, but rather updated. This comment intends to update the language regarding exterior wildfire sprinkler systems.

Exterior wildfire sprinkler systems have been used for several years and have been proven successful. These systems are not successful in combatting the actual flame front, however, they are extremely successful in mitigating the impact of flying embers. Flying embers can travel for miles in front of the flame front during a wildfire. These embers land on structures, decks or furniture and ignite those materials well ahead of the flame front and can cause a tremendous strain on fire resources.

The Insurance Institute for Business and Home Safety (IBHS) stated in a March 12, 2019 article that "During wildfires, as many as 90% of homes and buildings damaged or destroyed were first ignited by embers or other fires set by embers, and not the main wildland fire front. Yet many home and business owners do not take practical, affordable steps to help reduce the risk posed by these flying embers."

Exterior wildfire sprinkler systems are not required, but they are available, and they are installed. Providing the little bit of guidance in the appendix for the code user will be a benefit when the issue arises.

Bibliography: https://ibhs.org/ibhs-news-releases/embers-cause-up-to-90-of-home-business-ignitions-during-wildfire-events/

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

There is no cost impact because nothing is required.

Comment (CAH2)# 668

WUIC12-24

IWUIC: SECTION 405, 405.1, 405.2, 405.3, 405.4, 602.3 (New), 602.3.1 (New), 602.3.2 (New)

Proposed Change as Submitted

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov); Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Darcy Davidson, Carlsbad Fire Department, California Fire Prevention Officers (darcy.davidson@carlsbadca.gov); Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com)

2024 International Wildland Urban Interface Code

Revise as follows:

SECTION ~~405~~ 602
FIRE PROTECTION PLANS

~~**405.1**~~ **602.1 General.** ~~Where required by the *code official*, a *fire protection plan* shall be prepared.~~
The code official is authorized to require the owner or owner's authorized agent to provide a fire protection plan. The fire protection plan shall be prepared to determine the acceptability of fire protection and life safety measures designed to mitigate wildfire hazards presented for the property under consideration.

The fire protection plan shall be prepared by a registered design professional, qualified landscape architect, qualified fire safety specialist or similar specialist acceptable to the code official and shall analyze the wildfire risk of the building, project, premises or region to recommend necessary changes.

The code official is authorized to require a preliminary fire protection plan prior to the submission of a final fire protection plan.

~~**405.2**~~ **602.2 Content~~s~~.** ~~The plan shall be based on a site-specific wildfire risk assessment that includes considerations of location, topography, aspect, flammable vegetation, climatic conditions and fire history. The plan shall address water supply, access, building ignition and fire-resistance factors, fire protection systems and equipment, *defensible space* and vegetation management.~~
The fire protection plan shall be based on a project-specific wildfire hazard assessment that includes considerations of location, topography, aspect, climatic and fire history.

The plan shall identify conformance with all applicable wildfire protection regulations.

The plan shall address fire department access, egress, road and address signage, water supply, and the applicable building codes and standards for wildfire safety. The plan shall identify mitigation measures to address the project's specific wildfire risk and shall include the information required in Sections 602.3 through 602.3.2.

Delete without substitution:

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

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

Add new text as follows:

602.3 Project information. . The final fire protection plan shall be reviewed and approved prior to start of construction.

602.3.1 Preliminary fire protection plan. When a preliminary fire protection plan is submitted, it shall include, at a minimum, the following:

1. Total size of the project.
2. Information on the adjoining properties on all sides, including current land uses, and if known, existing structures and densities, planned construction, natural vegetation, environmental restoration plans, roads and parks.
3. A map with all project boundary lines, property lines, slope contour lines, proposed structure foundation footprints, and proposed roads and driveways. The map shall identify project fuel modification zones and method of identifying the fuel modification zone boundaries.

602.3.2 Final fire protection plan. Final fire protection plan shall include items listed in Section 602.3.1 and the following:

1. A map identifying all proposed plants in the fuel modification zones with a legend that includes a symbol for each proposed plant species. The plan shall include specific information on each species proposed, including but not limited to:
   1.1. The plant life-form
   1.2. The scientific and common name
   1.3. The expected height and width for mature growth
2. Identification of irrigated and non-irrigated zones.
3. Requirements for vegetation reduction around emergency access and evacuation routes.
4. Identification of points of access for equipment and personnel to maintain vegetation in common areas.
5. Legally binding statements regarding community responsibility for maintenance of fuel modification zones.
6. Legally binding statements to be included in covenants, conditions and restrictions regarding property owner responsibilities for vegetation maintenance.

Reason: This proposal accomplishes two goals: 1) to relocate the Fire Protection Plan requirements to an appropriate location, and 2) enhance the provisions for the fire protection plan to provide guidance to those developing the fire protection plan.

The scope for Chapter 4 states that the chapter contains regulations for water supply and access. The Fire Protection Plan, currently in Section 405, does not fit under either of the Chapter 4 categories. Chapter 6 contains general requirements for fire protection. The provisions for a Fire Protection Plan fit more appropriately in Chapter 6, so they are mover to Section 602.

The California State Fire Marshal's office (SFM) workgroup 2020 was assembled to take on the task of creating a statewide approach for requiring a fire protection plan for any property under consideration to mitigate the wildfire hazards that may exist. This proposal is being submitted to the IWUIC, because the overall response from the design community has been positive. Nationwide consistency leads to further success in application of the code.

The proposal sets a framework for the elements of a fire protection plan to include. This proposal is a baseline of what a general plan shall consist of for evaluating the associated risks with a property and its location within a wildland-urban interface area. A proposed fire protection plan shall be approved before the start of any construction. This will ensure compliance with the requirements in this code. The enforcement of the protection plan starts at the beginning. The Fire Protection Plan is a document that can be referred to at any stage of a project.

Often, a preliminary Fire Protection Plan is submitted to help move a project along and save money for the owner during the different phases of construction. The preliminary Fire Protection Plan sets the groundwork and foundation for the boundaries of the project. This information is vital for planning departments and for cost analysis to be considered early on.

A final Fire Protection Plan includes all the requirements of the preliminary plan with the added landscaping details that may not have been completed in the early phase of a project. The code official will now have a complete document of the project and the planned fire protection to ensure the safety of the community, neighbors, and first responders. These documents and information will help first responders pre-plan for an incident.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The choice to require a fire protection plan is at the discretion of the code official. The design professional will typically incorporate any design criteria in the project cost. This is already a typical practice.

WUIC12-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The noted concerns were about the "qualified" person requirement and that these requirements should be in an appendix as recommended planning guidance. Furthermore, there were issues within the language of the preliminary and final lists regarding the application to different situations and locations. The desire to see the cost impact on this requirement in areas outside of California. (Vote: 11-2)

WUIC12-24

Individual Consideration Agenda

Comment 1:

IWUIC: SECTION 602, 602.1

Proponents: Adria Smith, CSG Engineers, California Fire Prevention Officers (adrias@csgengr.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

SECTION 602
FIRE PROTECTION PLANS

602.1 General. The code official is authorized to require the owner ~~or owner's authorized agent~~ to provide a fire protection plan. The fire protection plan shall be prepared to determine the acceptability of fire protection and life safety measures designed to mitigate wildfire hazards presented for the property under consideration.
The fire protection plan shall be prepared by a registered design professional, ~~qualified~~ approved landscape architect, ~~qualified~~ approved fire safety specialist or similar specialist ~~acceptable to the code official~~ and shall analyze the wildfire risk of the building, project, premises or region to recommend necessary changes.

The code official is authorized to require a preliminary fire protection plan prior to the submission of a final fire protection plan.

Reason: This proposal was disapproved by the committee as there were questions regarding the qualified professional. We are changing qualified to approved as well as deleting the owner's authorized agent as it is already defined in the code. There was also discussion among the committee to move this to an appendix, however, we feel this is reasonable to be placed in the body of the code for

consistency purposes among jurisdictions that have high fire areas.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal adds clarification, details and an enhancement to what is currently in the IWUIC. There is no related construction cost, however, there may be a cost borne by the applicant to have the plan developed depending on the scope of the project.

Comment (CAH2)# 543

WUIC13-24

IWUIC: 501.1

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Revise as follows:

501.1 Scope. Buildings and structures shall be constructed in accordance with the *International Building Code* and this code. **Exceptions:**

1. Accessory structures ~~not exceeding 120 square feet (11 m^2) in floor area~~ and agricultural buildings ~~where~~ located ~~not less than~~ 50 feet (15 240 mm) or more from buildings containing habitable spaces are not required to comply with this code.
2. ~~Agricultural buildings not less than 50 feet (15 240 mm) from buildings containing habitable spaces.~~

Reason: Based on the current language, detached accessory structures can essentially be categorized into four groups. These groups are illustrated in Figure 1:

- Group A: Detached accessory structures with a floor area of 120 sq ft and less, located less than 50 feet of the primary structure.
- Group B: Detached accessory structures with a floor area greater than 120 sq ft, located less than 50 feet of the primary structure.
- Group C: Detached accessory structures with a floor area of 120 sq ft and less, located 50 feet or more from the primary structure.
- Group D: Detached accessory structures with a floor area greater than 120 sq ft, located at 50 feet or more from the primary structure.

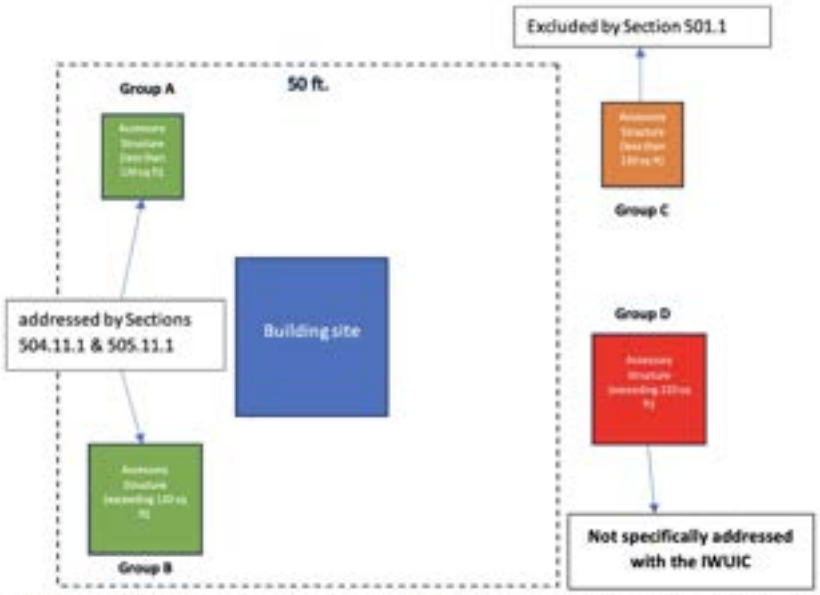

Figure 1. Detached accessory structures condition in 2024 IWUIC Scope.

Section 501.1 exempts Group C from the IWUIC, but all other structures must comply with the IBC and the IWUIC. Furthermore, Sections 504.11 and 505.11 of the IWUIC specifically address Group A and Group B detached accessory structures. Sections 504.11 and 505.11 require exterior walls of detached accessory structures located less than 50 feet from a building containing habitable space to be constructed consistent with the required construction of the exterior walls of primary structure. Group D (located 50 feet or more from the primary building and a floor area exceeding 120 square feet) is not specifically addressed by the IWUIC. The lack of specificity could lead

to uncertainty regarding the construction of Group D detached accessory structures. A strict reading of the charging paragraph of Section 501.1, would necessitate compliance with all the requirements detailed in both the IBC and the IWUIC for Group D structures. This would mean that Group D structures would have to meet all the requirements related to ignition resistance class 1 or 2, resulting in construction that is more stringent than Group A and B structures even though Group D structures pose a much lower risk. This is counterintuitive.

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

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

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

Figure 2. Detached accessory structures requirements for IR Construction classes 1.

To address this issue, the proposed language recommends exempting all detached accessory structures located more than 50 feet away from a habitable building from the scope of IWUIC. This suggestion is supported by the findings of structure separation experiments conducted by the IBHS and NIST. These experiments indicate that when the separation distance between structures exceeds 50 feet, the risk of conflagration and structure ignition is significantly lower [1-3]. Chapter 7A of the California Building Code also includes similar requirements in Section 710A.3 (Figure 3) and this change will align these two codes from this perspective [4].

> ***710A.3 Where required.*** *Miscellaneous structures that require a permit, and accessory buildings of any size, when separated from an applicable building on the same lot by a distance of less than 3 feet (914 mm), shall comply with Section 710A.3.1. Accessory buildings that are greater than 120 square feet (11.15 m²), when separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm) shall comply with Section 710A.3.2.*
>
> *When required by the enforcing agency, miscellaneous structures that require a permit, and accessory buildings that are 120 square feet (11.15 m²) or less, when separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm), shall comply with either Section 710A.3.4 or Section 710A.3.3, respectively.*
>
> *No requirements shall apply to accessory buildings or miscellaneous structures when located 50 feet (15 240 mm) or more from an applicable building on the same lot.*

Figure 3. 2022 California Building Code, Chapter 7A, Section 710A, Accessory Buildings and Miscellaneous Structures [4].

Bibliography:

1. Maranghides, A., Link, E. D., Nazare, S., Hawks, S., McDougald, J., Quarles, S. L., & Gorham, D. J. (2022). *WUI Structure/Parcel/Community Fire Hazard Mitigation Methodology*. Department of Commerce. National Institute of Standards and Technology. https://doi.org/10.6028/NIST.TN.2205

2. Maranghides, A., Nazare, S., Hedayati, F., Gorham, D., Link, E., Hoehler, M., ... & Walton, W. (2022). *Structure Separation*

Experiments: Shed Burns without Wind. National Institute of Standards and Technology, US Department of Commerce. https://doi.org/10.6028/NIST.TN.2235

3. Maranghides, A., Nazare, S., Butler, K. M., Johnsson, E. L., Link, E., Bundy, M., ... & Frievalt, F. (2023). *NIST Outdoor Structure Separation Experiments (NOSSE) with Wind.* https://doi.org/10.6028/NIST.TN.2253

4. 2022 California Building Code, California code of regulation, Title 24, Part 2 (Volumes 1 & 2) with Jan 2023 Errata, Section 710A.3.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

$0 or less. This proposed code change provides clarity for detached accessory structures with floor areas exceeding 120 square feet and located 50 feet or more from the main building. Existing language currently requires these detached accessory structures to comply with the IWUIC. This proposed code change will exclude these structures from these requirements. Consequently, detached accessory structures exceeding 120 square feet in floor area and located more than 50 feet away from the main building will no longer need to comply with all the stipulated conditions of IR Class 1 or 2.

Estimated Immediate Cost Impact Justification (methodology and variables):

This will result in a decrease in the cost of construction for detached accessory structures that have a floor area exceeding 120 square feet and are located 50 feet or more from a building containing habitable space.

WUIC13-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The proposal does not take into account accessory structure fire loading above 120 square feet and no technical substantiation was given for how that affects the wildfire hazard to buildings next to it within the 50-foot range. Also, there was concern that this is based on experience in California. However, the experience in California seems to also call for the defensible space around the structures, which does not get addressed in the proposal. Additional concern was noted about striking the 120 square feet area that could require an automatic sprinkler system for certain structures over 120 square feet in area required by the building code and those structures could pose a risk to the wildland. Finally, there was a little concern with the definition of accessory structure regarding the specific text of “occupancy other than a habitable building.” (Vote: 13-0)

WUIC13-24

Individual Consideration Agenda

Comment 1:

IWUIC: 501.1

Proponents: Milad Shabanian, Insurance Institute for Buisness & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net) requests As Modified by Committee (AMC2)

Further modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

501.1 Scope. Buildings and structures shall be constructed in accordance with the *International Building Code* and this code. **Exceptions:** Accessory structures and agricultural buildings located 50 feet (15 240 mm) or more from buildings containing habitable spaces are not required to comply with this chapter ~~code~~.

Reason: This comment addresses the committee's concerns regarding original language. During CAH#1, an opponent argued that this language would disrupt the enforcement of defensible space requirements for structures and create issues with sprinkler system requirements. This is while the only intention is to clarify that the exception only applied to the "construction" of detached accessory structures in WUI areas as the 2024 IWUIC is not specifically clear on this. The committee recommended deleting the final part of the exception and ending it at "containing habitable spaces." to remove the confusion caused by "comply with this code". However, removing the last part of the proposed change could introduce additional confusion about what specifically these structures are being exempted from. The new language in this comment clarifies that detached accessory structures that are located 50 feet or more from a building containing habitable space, are not required to comply with the construction criteria in Chapter 5 of the IWUIC.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

$0 or less.

Estimated Immediate Cost Impact Justification (methodology and variables):

This proposed code change provides clarity for detached accessory structures with floor areas exceeding 120 square feet and located 50 feet or more from the main building. Existing language currently requires these detached accessory structures to comply with the IWUIC. This proposed code change will exclude these structures from these requirements. Consequently, detached accessory structures exceeding 120 square feet in floor area and located more than 50 feet away from the main building will no longer need to comply with all the stipulated conditions of IR Class 1 or 2. This will result in a decrease in the cost of construction for detached accessory structures that have a floor area exceeding 120 square feet and are located 50 feet or more from a building containing habitable space.

Comment (CAH2)# 20

WUIC16-24

IWUIC: SECTION 202, 501.4 (New), 501.4.1 (New), 501.4.2 (New), 503.2.1, ASTM Chapter 07 (New)

Proposed Change as Submitted

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org)

2024 International Wildland Urban Interface Code

Delete without substitution:

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

1. ~~Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E136 shall be considered noncombustible within the meaning of this section.~~
2. ~~Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame spread index obtained according to tests conducted as specified in ASTM E84 or UL 723.~~

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

Add new text as follows:

501.4 Noncombustibility tests. The tests indicated in Section 501.4.1 shall serve as criteria for acceptance of building materials. The term noncombustible does not apply to the flame spread characteristics of interior finish or trim materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or flame spread beyond the limitations herein established through the effects of age, moisture or other atmospheric conditions.

501.4.1 Testing. 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.

501.4.2 Additional requirements. The term noncombustible does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to the requirements of ASTM E136.

Revise as follows:

503.2.1 Noncombustible material. Material shall comply with the requirements for noncombustible materials in Section 501.4 ~~definition of *noncombustible* materials in Section 202~~.

Add new standard(s) as follows:

ASTM

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

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

Reason: FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**

It has been a recent practice in ICC codes that definitions should not contain requirements but just concepts. This proposal does exactly that.

This proposal deletes the definition of noncombustible from section 202 of the IWUIC and adds the exact requirements for noncombustibility from section 703 of the IBC into a new section. This makes the requirements for noncombustible materials consistent with those in the IBC (with the same language). Additionally, this proposal retains the added requirements from the IWUIC regarding surface finish materials and materials close to flues or heating appliances.

This proposal is also consistent with other ICC codes and with the requirements of ASTM E136. Note that materials can be noncombustible in accordance with ASTM E136 and yet exhibit some limited flaming.

This proposal also deletes a definition with requirements and incorporates the requirements into the section of the code that deals with Special Building Construction Regulations (Chapter 5) in the General section.This proposal also revises section 503.2.1 that sends the code user to section 202 for the “requirements” got noncombustible materials, now sending the user to the new section 501.4

Comment: Since neither “flues, heating appliances and sources of high temperature” nor “interior finish” are regulated by the IWUIC, a simpler solution would be not to add proposed new section 501.4.2.

See the following from other ICC codes.

1. The IBC does not have a definition for noncombustible material but section 703.3 states as shown below, which is exactly what this proposal does. It is based on

2. The IRC defines as follows: “NONCOMBUSTIBLE MATERIAL. A material that passes ASTM E136.”

3. The IFC does not have a definition.

4. The IMC defines as follows: “NONCOMBUSTIBLE MATERIAL. A material that passes ASTM E136.”

If a material is tested to ASTM E136 it will pass the test requirements even if it ignites (a bit) and has some burning and some mass loss (see the actual language below). Therefore, saying (as the IWUIC says now in item 1) that “no part will ignite or burn” is inconsistent with many materials that pass ASTM E136.

Two different pieces of equipment are used to pass ASTM E136. The first one (now called Option A) is the equipment that was always in ASTM E136. The second one, called Option B, uses the equipment in ASTM E2652 but the acceptance criteria are the same for both pieces of equipment and are in section 15 of ASTM E136. The language from the IBC and ASTM E136 is shown below.

IBC section 703 states as follows (and a change will be proposed to add the words "and pass the test"):

703.3 Noncombustibility tests. The tests indicated in Section 703.3.1 shall serve as criteria for acceptance of building materials as set forth in Sections 602.2, 602.3 and 602.4 in Types I, II, III and IV construction. The term “noncombustible” does not apply to the *flame spread* characteristics of *interior finish* or *trim* materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or *flame spread* beyond the limitations herein established through the effects of age, moisture or other atmospheric conditions.

703.3.1 Noncombustible materials. Materials required to be noncombustible shall be tested in accordance with ASTM E136. 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.

ASTM E136 states as follows when it requires that a material pass the test:15. Report

15.1 Report the material as passing the test if at least three of the four test specimens tested meet the individual test specimen criteria detailed either in 15.2 or in 15.3. The three individual test specimens do not need to meet the same individual test specimen criteria.

15.2 If the weight loss of an individual test specimen is 50 % or less, that test specimen is considered as having met the individual test specimen criteria when all the criteria in 15.2.1 through 15.2.3 are met:

15.2.1 For the duration of the test, the recorded temperature of the surface thermocouple does not rise more than 30 °C (54 °F) above the stabilized furnace temperature established at T2 prior to the test.

15.2.2 For the duration of the test, the recorded temperature of the interior thermocouple does not rise more than 30 °C (54 °F) above the stabilized furnace temperature established at T2 prior to the test.

15.2.3 There is no flaming from the test specimen after the first 30 s.

15.3 If the weight loss of an individual test specimen exceeds 50 %, that test specimen is considered as having met the individual test specimen criteria when all the criteria in 15.3.1 through 15.3.3 are met:

15.3.1 For the duration of the test, the recorded temperature of the surface thermocouple does not rise above the stabilized furnace temperature established at T2 prior to the test.

15.3.2 For the duration of the test, the recorded temperature of the interior thermocouple does not rise above the stabilized furnace temperature established at T2 prior to the test.

15.3.3 There is no flaming from the test specimen at any time during the test.

15.4 Report whether the apparatus for Option A or the apparatus for Option B was used.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal will not have any cost impact. It simply moves a definition with requirements into an appropriate section in the chapter that deals with materials.

WUIC16-24

Public Hearing Results (CAH1)

Committee Action: **As Modified by Committee**

Committee Modification:
2024 International Wildland Urban Interface Code

501.4.1 Testing.
Materials required to be noncombustible shall ~~be tested in accordance with~~pass ASTM E136~~ and pass the test~~. Alternately, materials required to be noncombustible shall be tested in accordance with ASTM E2652 ~~using~~ and meet 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.

Committee Reason: The committee stated that the reason for the approval of the modification was that it clarifies the testing criteria better. The committee stated that the reasons for the approval of the proposal with the modification were: The proposal deletes the definition that contains technical requirements in it and then relocates the requirements for noncombustible materials that are consistent with the IBC with the same language into new sections in Chapter 5. Additionally, it also retains the added requirements from the WUIC regarding surface finish, materials, and materials close to the flues and heating appliances. (Vote: 13-0)

WUIC16-24

Individual Consideration Agenda

Comment 1:

IWUIC: 503.2.1, 501.4, 501.4.1, 501.4.2

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net) requests As Modified by Committee (AMC2)

Further modify as follows:

2024 International Wildland Urban Interface Code

503.2.1 Noncombustible material. Material shall comply with the requirements for noncombustible materials in Section 503.2.1.1 ~~501.4~~.

~~**501.4**~~ **503.2.1.1 Noncombustibility tests.** The tests indicated in Section503.2.1.1.1 ~~501.4.1~~ shall serve as criteria for acceptance of building materials. The term noncombustible does not apply to the flame spread characteristics of interior finish or trim materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or flame spread beyond the limitations herein established through the effects of age, moisture or other atmospheric conditions.

~~**501.4.1**~~ **503.2.1.1.1 Testing.** Materials required to be noncombustible shall pass ASTM E136. Alternately, materials required to be noncombustible shall be tested in accordance with ASTM E2652 and meet 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.

~~**501.4.2**~~ **503.2.1.1.2 Additional requirements.** The term noncombustible does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to the requirements of ASTM E136.

Reason: This comment is intended to bring more uniformity to the various building materials referenced in the IWUIC. The change only moves the Noncombustibility test requirements of noncombustible (NC) materials from Section 501 (General) to Section 503 (Ignition Resistant Construction and Material) to improve consistency within the code. Currently, the IWUIC is the only I-Code that lists some material's and assembly's requirements in a General Section, while other materials and assemblies are listed in Section 503. This inconsistency has caused significant confusion among code users. Providing a reference to noncombustible materials in Section 503.2.1

with a pointer to Section 501.4 complicates the code, especially for new users. This concern was raised in the first action committee hearing. The proponents of WUIC16-24 argue that a "noncombustible material" is a generic type of concept that is used in different sections of different chapters, therefore, it should be located in the general section of code. According to a review performed by IBHS, there is no other instance within any of the other I-Codes supporting this argument. Additionally, the original proposal as written, would add "testing requirements" for noncombustible materials in the general section of Chapater 5 and the reference to "noncombustible materials" would remain in Section 503.

As part of its mission to enhance community resiliency and safety, the Insurance Institute for Business and Home Safety (IBHS), launched the Wildfire Prepared (WFP) Home designation in 2022. To receive this designation, homeowners must provide information about their homes and construction materials. The IBHS product team reviews these requests and addresses technical questions. During this process, it became evident that ordinary homeowners and new code users are particularly confused around noncombustible materials and where they are required. WUIC16-24, without this proposed comment, will add to this confusion by sending users to another location for what qualifies as a noncombustible material. This comment does not proposing any technical change. It simply relocates the requirements for noncombustible materials to section 503, which is the appropriate place for building material and assemblies.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal relocates a construction material to a more appropriate section and refines the code language to ensure its seamless integration in the new location without proposing any technical changes resulting in no cost impact.

Comment (CAH2)# 51

WUIC18-24

IWUIC: 501.3, SECTION 503, 503.1, 503.2, 503.2.1, 503.2.2, 503.2.3, 503.2.4, 503.2.4.1, 503.2.4.2, 503.2.4.3, 503.2.4.3.1, 503.2.4.3.2, 503.2.4.3.3, 503.3 (New)

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Delete without substitution:

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

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

Revise as follows:

SECTION 503
~~IGNITION-RESISTANT~~ CONSTRUCTION AND ~~MATERIAL~~ MATERIALS

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

503.2 Ignition-resistant building material. Ignition-resistant building materials shall comply with any one of the requirements in Section 503.2.1 through 503.2.4.

503.2.1 Noncombustible material. Material shall comply with the definition of *noncombustible* materials in Section 202.

503.2.2 Fire-retardant-treated wood. Fire-retardant-treated wood shall be identified for exterior use and shall meet the requirements of Section 2303.2 of the *International Building Code*.

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

503.2.4 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 (3.2 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 503.2.4.1 through 503.2.4.3. **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.

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

503.2.4.2 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.

503.2.4.3 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 503.2.4.3.1 through 503.2.4.3.3, as applicable to the materials and conditions of use.

503.2.4.3.1 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.

503.2.4.3.2 Wood-plastic composite materials. Wood-plastic composite materials shall also 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/m^2 in the horizontal orientation, then weathering in accordance with ASTM D7032 and then retesting in accordance with ASTM E1354 and exhibiting an increase of no more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

503.2.4.3.3 Plastic lumber materials. Plastic lumber materials shall also 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/m^2 in the horizontal orientation, then weathering in accordance with ASTM D6662 and then retesting in accordance with ASTM E1354 and exhibiting an increase of no more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

Add new text as follows:

503.3 Fire-resistance-rated construction. Where this code requires 1-hour fire-resistance-rated construction, the fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E119 or UL 263 for exposure from the exterior side of the assembly **Exceptions:**

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

Reason: This proposal relocates a construction method to a more appropriate section and refines the code language to ensure its seamless integration in the new location. In the 2024 IWUIC, Section 501.3, onwhich addresses the qualification of fire-resistance-rated construction, is located in Section 501, the general section of Chapter 5. Typically, these general sections focus primarily on the scope and purpose of each chapter. Listing construction methods within Section 501 is not consistent with the other general sections of the IWUIC. For clarification purposes, this proposal relocates Section 501.3 to new Section 503.3. Section 503 is specifically dedicated to matters related to construction and materials. The title of section 503 is proposed to be changed from ignition-resistant construction and material to construction and material to construction and materials. The charging paragraph in Section 503.1 has been refined to ensure that the relocation of Section 501.3 to new Section 503.3 will be correlated with this relocation.

Background

In 2012, Section 501.3 was introduced to IWUIC as part of WUIC2-9/10 [1]. Then, in 2015, exceptions 1 and 2 were incorporated into this section via a proposal brought forth by WUIC1-13 [2].

Bibliography:

1. Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, WUIC2–09/10, https://www.iccsafe.org/wp-content/uploads/IWUIC1.pdf

2. Jason Thompson, National Concrete Masonry Association, representing Masonry Alliance for Codes and Standards, WUIC1-13, https://www.iccsafe.org/wp-content/uploads/11-IWUIC.pdf

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This code change proposal is strictly a clarification. Relocating existing Section 501.3 to new Section 503.3 pertaining to construction and material will not result in a technical changes to the code. As a result, the proposal will not have an impact on construction costs, either positively or negatively.

WUIC18-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval of the proposal was that although the change relocates the requirements to the right section, there is some work that needs to be done based upon the proponent's request to bring it back to the committee. (Vote: 12 -0)

WUIC18-24

Individual Consideration Agenda

Comment 1:

IWUIC: SECTION 503, 503.1, 501.3

Proponents: Milad Shabanian, Insurance Institute for Buisness & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net) requests As Modified by Committee (AMC2)

Replace as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

SECTION 503
~~IGNITION-RESISTANT~~ CONSTRUCTION AND MATERIAL

503.1 General. Buildings and structures hereafter constructed, modified or relocated into or within *wildland-urban interface areas* shall meet the construction requirements in accordance with Table 503.1. Class 1, Class 2 or Class 3, ignition-resistant construction shall be in accordance with Sections 504, 505 and 506, respectively. Materials required to be ~~ignition-resistant materials~~ *ignition-resistant building materials* shall comply with the requirements of Section 503.2. Where this code requires fire-resistance rated construction, fire-resistance

ratings shall be determined in accordance with Section 503.4.

~~**501.3**~~ **503.4 Fire-resistance-rated construction.** Where this code requires ~~1 hour~~ *fire-resistance-rated construction*, the fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E119 or UL 263. **Exceptions:**

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

Reason: In addition to the reason provided for original code change proposal this comment tries to address two issues:

This comment deletes an unnecessary term used in charging paragraph of section 501.3 referring to 1 hour fire resistance rated construction, and adds a sentence to charging paragraph of Section 503.1, change the proposed section number to 503.4 and aligns this change with WUIC17-24 which got approved in CAH#1.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This code change proposal is strictly a clarification. Relocating existing Section 501.3 to new Section 503.3 pertaining to construction and material will not result in a technical changes to the code. As a result, the proposal will not have an impact on construction costs, either positively or negatively.

Comment (CAH2)# 52

WUIC20-24

IWUIC: TABLE 503.1

Proposed Change as Submitted

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org)

2024 International Wildland Urban Interface Code

Revise as follows:

TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION CLASSIFICATION[a]

DEFENSIBLE SPACE[ea]	FIRE HAZARD SEVERITY					
	Moderate Hazard		High Hazard		Extreme Hazard	
	Water Supply[b]		Water Supply[b]		Water Supply[b]	
	Conforming[ab]	Nonconforming[ec]	Conforming[ab]	Nonconforming[ec]	Conforming[ab]	Nonconforming[ec]
Less than required by Table 603.2	IRClass 2	IRClass 1	IRClass 1	IR 1 N.C. Rated[d]	IR 1 N.C. Class 1[d]	Not PermittedNP
ConformingComplies with Table 603.2	IRClass 3	IRClass 2	RIClass 2	IRClass 1	IRClass 1	IR 1 N.C.Class 1[d]
1.5 × Conforming150% or more of distance required in Table 603.2	Not Required NR	IRClass 3	IRClass 3	IRClass 2	IRClass 2	IRClass 1

NP = Not Permitted; NR = Not Required; Class 1 = Ignition-resistant construction in accordance with Section 504; Class 2 = Ignition-resistant construction in accordance with Section 505; Class 3 = Ignition-resistant construction in accordance with Section 506.

a. ~~Access shall be in accordance with Section 403.~~ Distance of defensible space provided on all sides of structure as required in Table 603.2.

b. ~~Subdivisions shall have a conforming water supply in accordance with Section 402.1.~~ A conforming water supply complying with Section 404.

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

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

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

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

c. ~~Conformance based on Section 603.~~ A nonconforming water supply is any water system or source that does not comply with Section 404, including situations where there is no water supply for structure protection or fire suppression.

d. ~~Conformance based on Section 404.~~ In addition to Class 1 construction, the exterior walls shall comply with any of the following:

1. Exterior walls having a fire-resistance rating of 1 hour or more with a noncombustible exterior wall covering.
2. Exterior walls constructed of heavy timber members.
3. Exterior walls of log wall construction.

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

Reason: FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**

This proposal intends to clarify the application of Table 503.1.

IR 1 through IR 3 are replaced with Class 1 through Class 3. This is consistent with the terminology in the charging section, Section 503.1, and Sections 504, 505 and 506.

Nonconforming and conforming under defensible space is clarified as to what the conformance is referencing—the width of defensible space, or the distance from the structure.

The “IR 1 N.C.” term is replaced with “rated”. Footnote d specifies that rated construction consists of Class 1 ignition-resistant construction and the protection of the exterior walls is increased to one of the 3 options in Footnote d.

For additional clarification, the designation “NP” is intended to mean that any construction in areas with these risk factors is not permitted.

The designation “NR” is intended to mean that ignition resistant construction is not required for exterior walls. All other applicable requirements still apply.

There are three separate code changes dealing with IWUIC Table 503.1. Attached PDF shows the end goal for Table 503.1.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal is an editorial clairification that does not impact cost. See also the proponent’s reason statement.

WUIC20-24

Public Hearing Results (CAH1)

Committee Action: **As Modified by Committee (AMC1)**

Committee Modification:
2024 International Wildland Urban Interface Code
Revise as follows:

TABLE 503.1 ~~IGNITION-RESISTANT~~ WUI CONSTRUCTION CLASSES ~~CLASSIFICATION~~

DEFENSIBLE SPACE[a]	FIRE HAZARD SEVERITY					
	Moderate Hazard		High Hazard		Extreme Hazard	
	Water Supply		Water Supply		Water Supply	
	Conforming[b]	Nonconforming[c]	Conforming[b]	Nonconforming[c]	Conforming[b]	Nonconforming[c]
Less than required by Table 603.2	Class 2	Class 1	Class 1	~~Rated~~ Class 1[d]	Class 1[d]	NP
Complies with Table 603.2	Class 3	Class 2	Class 2	Class 1	Class 1	Class 1[d]
150% or more of distance required in Table 603.2	NR	Class 3	Class 3	Class 2	Class 2	Class 1

	NP = Not Permitted; NR = Not Required; Class 1 = ~~Ignition-resistant~~ construction in accordance with Section 504; Class 2 = ~~Ignition-resistant~~ construction in accordance with Section 505; Class 3 = ~~Ignition-resistant~~ construction in accordance with Section 506.
a.	Distance of defensible space provided on all sides of structure as required in Table 603.2.
b.	A conforming water supply complying with Section 404.
c.	A nonconforming water supply is any water system or source that does not comply with Section 404, including situations where there is no water supply for structure protection or fire suppression.
d.	In addition to Class 1 construction, the exterior walls shall comply with any of the following: 1. Exterior walls having a fire-resistance rating of 1 hour or more with a noncombustible exterior wall covering. 2. Exterior walls of heavy timber construction ~~constructed of heavy timber members~~. 3. Exterior walls of log wall construction.

Committee Reason: The committee stated that the reason for the approval of first modification was that it was appropriate to change the terminology from heavy timber member to heavy timber construction. The committee stated that the reason for the approval of the second modification was that it deleted ignition resistance in the footnotes and in the title. The committee stated that the reasons for the approval of the proposal with the modifications were: It clarifies the intent by replacing ignition resistant IR 1 through 3 with Class 1 through 3, making it now consistent with the charging section of Section 503.1 and Sections 504, 505 and 506. (Vote: 13-0)

WUIC20-24

Individual Consideration Agenda

Comment 1:

IWUIC: TABLE 503.1

Proponents: Stephen Skalko, Stephen V. Skalko, P.E. & Associates LLC, Masonry Alliance for Codes and Standards (svskalko@svskalko-pe.com) requests As Modified by Committee (AMC2)

Further modify as follows:

2024 International Wildland Urban Interface Code

TABLE 503.1 WUI CONSTRUCTION CLASSES

DEFENSIBLE SPACE[a]	FIRE HAZARD SEVERITY					
	Moderate Hazard		High Hazard		Extreme Hazard	
	Water Supply		Water Supply		Water Supply	
	Conforming[b]	Nonconforming[c]	Conforming[b]	Nonconforming[c]	Conforming[b]	Nonconforming[c]
Less than required by Table 603.2	Class 2	Class 1	Class 1	Class 1[d]	Class 1[d]	NP
Complies with Table 603.2	Class 3	Class 2	Class 2	Class 1	Class 1	Class 1[d]
150% or more of distance required in Table 603.2	NR	Class 3	Class 3	Class 2	Class 2	Class 1

DEFENSIBLE SPACE	FIRE HAZARD SEVERITY					
	Moderate Hazard		High Hazard		Extreme Hazard	
	Water Supply		Water Supply		Water Supply	
	Conforming	Nonconforming	Conforming	Nonconforming	Conforming	Nonconforming

NP = Not Permitted; NR = Not Required; Class 1 = Construction in accordance with Section 504; Class 2 = Construction in accordance with Section 505; Class 3 = Construction in accordance with Section 506.

a. Distance of defensible space provided on all sides of structure as required in Table 603.2.

b. A conforming water supply complying with Section 404.

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

d. In addition to Class 1 construction, the exterior walls shall comply with any of the following:

1. Exterior walls having a fire-resistance rating of 1 hour or more with a noncombustible exterior wall covering.
2. Exterior walls of heavy timber construction <u>having a fire resistance rating of 1-hour or more</u>.
3. Exterior walls of log wall construction <u>having a fire resistance rating of 1-hour or more</u>.

Reason: Since walls of heavy timber construction and log walls are listed as equivalent alternatives to a 1-hour fire rated wall with a noncombustible exterior wall covering, it is implied they would also meet the 1-hour fire resistance. For consistency this change makes clear all three types of walls should have a fire resistance rating of 1-hour or more.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

Since heavy timber walls and log walls are considered equivalent alternate exceptions to a 1-hour fire rated wall with noncombustible exterior wall covering, one has to assume these walls also need to have at least a 1-hour fire resistance. Clarifying this in the code will not increase costs.

Comment (CAH2)# 524

WUIC22-24

IWUIC: 402.2.2, 404.1, 503.1, TABLE 503.1

Proposed Change as Submitted

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org)

2024 International Wildland Urban Interface Code

Revise as follows:

402.2.2 Water supply. Individual structures hereafter constructed or relocated into or within *wildland-urban interface areas* shall be provided with a ~~conforming~~ water supply in accordance with Section 404. **Exception~~s~~:**

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

404.1 General. ~~Where provided in order to qualify as a conforming water supply for the purpose of Table 503.1 or as required for new subdivisions in accordance with Section 402.1.2, an~~ An *approved* water source shall have an adequate water supply for the use of the fire protection service to protect buildings and structures from exterior fire sources or to suppress structure fires within the *wildland-urban interface area* of the jurisdiction in accordance with this section. **Exception:** Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m^2).

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

TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION~~[a]~~

Portions of table not shown remain unchanged.

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

~~a. Access shall be in accordance with Section 403.~~

IR 1 = Ignition-resistant construction in accordance with Section 504; IR 2 = Ignition-resistant construction in accordance with Section 505; IR 3 = Ignition-resistant construction in accordance with Section 506.

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

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

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

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

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

~~c~~ a. Conformance based on Section 603.

~~d.~~ ~~Conformance based on Section 404.~~

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

Reason: FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**

The footnote reference to Section 403 (Access) is removed as not necessary. Compliance with Section 403 is required and a footnote "pointer" is redundant.

The footnote reference to Section 404 (Water Supply) is deleted in accordance with deletion of the Water Supply references in the TableWater supply in accordance with Section 404 should be provided for all new construction. As a tool for fire suppression and structure hazard mitigation during a WUI fire, firefighters may not be available to protect structures, so in that instance water supply would not reduce the fire risks or be an effective mitigation. Removing water supply puts the emphasis for protection of structures from wildland fire onto the constriction of the building to be ignition resistant and the defensible space.

There are three separate code changes dealing with IWUIC Table 503.1. The PDF attached shows the end goal for Table 503.1.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

Chapter 5 and Table 503.1 are the requirements for newly built structures and subdivisions in areas regulated by the IWUIC. Accordingly, a compliant water supply should always be provided or addressed through approved alternative methods or materials as allowed by the code. The application of this Table as currently written allows for a reduction in required IR Construction materials when the water supply complies with what is already required by this code,

The cost of construction will be increased based on this proposal as compared to the cost reduction (allowance) that is currently provided. That cost will be based on the difference of IR 3 construction vs. IR 2 or IR 2 vs IR1.

Summarized from ChatGPT: The cost of adding fire mains for a subdivision can vary widely depending on several factors such as the size of the subdivision, the existing infrastructure, local building codes and regulations, terrain, distance to the nearest water source, and the type of fire suppression system being installed. This provides a general estimate. Installing fire mains typically involves laying underground water pipes to supply water for firefighting purposes. Costs may include excavation, piping materials, valves, hydrants, backflow prevention devices, labor, permits, engineering/design fees, and any necessary road or sidewalk repairs.

The cost of installing fire mains for a subdivision could range from $50,000 to $200,000 or more per mile of pipe, depending on various

factors. Based upon the information obtained from ChatGPT an estimate of cost per structure has been developed. This estimate assumes a relatively straightforward installation with minimal obstacles. So assuming a subdivision of 20 house subdivision with generous spacing is about .1 mile distance. $5000-$20,000 for the subdivision based upon that distance. For each home an overall cost of $250-$1000 per structure. However, since they will have a conforming water supply as currently shown in the table they will not be required to upgrade the ignition resistant construction type.

It's important to note that these costs can vary significantly based on local conditions, regulations, and specific project requirements.

Estimated Immediate Cost Impact Justification (methodology and variables):

The cost of construction will be increased based on this proposal as compared to the cost reduction (allowance) that is currently provided. That cost will be based on the difference of IR 3 construction vs. IR 2 or IR 2 vs IR1. That cost would typically not exceed 1-2% of overall construction cost, but is variable based on the size of the building and the choice of building materials chosen to comply.

WUIC22-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The action taken on WUIC21 that added the IR 3 requirement with a 1.5 conforming defensible space in a moderate hazard location. The concern over the requirements for existing buildings and homes. It was noted that the non-conforming column would be useful to the code official in challenging situations when you are building in a location that has an existing infrastructure. Additionally, the impact on existing homes that could put a homeowner in a situation where they may never be able to do a renovation or do anything on their own because they cannot comply with the water supply requirements. (Vote: 9-4)

WUIC22-24

Individual Consideration Agenda

Comment 1:

IWUIC: 402.2.2, 404.1, 503.1, TABLE 503.1

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

402.2.2 Water supply. Individual structures ~~hereafter~~ newly constructed ~~or relocated into or~~ within *wildland-urban interface areas* shall be provided with a water supply in accordance with Section 404. **Exception:**

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

404.1 General. An *approved* water source shall have an adequate water supply for the use of the fire protection service to protect buildings and structures from exterior fire sources or to suppress structure fires within the *wildland-urban interface area* of the jurisdiction in accordance with this section. **Exception:** Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m^2).

Revise as follows:

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

TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION

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

.

IR 1 = Ignition-resistant construction in accordance with Section 504; IR 2 = Ignition-resistant construction in accordance with Section 505; IR 3 = Ignition-resistant construction in accordance with Section 506.

.

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

a. Conformance based on Section 603.

Reason: The only change was to the language regarding existing structures to make it clear that the the original change was only applicable to new construction. These changes to the original proposal address the committee's comments.

FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**.

Cost Impact: Increase

Estimated Immediate Cost Impact:

The need for a sanctioned water supply will increase the cost of construction.

Estimated Immediate Cost Impact Justification (methodology and variables):

Will vary depending on the size and type of water supply.

Estimated Life Cycle Cost Impact:

n/a

Estimated Life Cycle Cost Impact Justification (methodology and variables):

n/a

Comment (CAH2)# 255

WUIC23-24

IWUIC: TABLE 503.1

Proposed Change as Submitted

Proponents: Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com)

2024 International Wildland Urban Interface Code

Revise as follows:

TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION[a]

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

a. Access shall be in accordance with Section 403.

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

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

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

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

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

c. Conformance based on Section 603.

d. Conformance based on Section 404.

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

Reason: This proposal eliminates the last row in Table 503.1. The deleted row only applies where a structure provides a defensible space distance that is 150% or more of a conforming defensible space. Section 503.1 states that the requirements in Table 503.1 only apply to new construction or new structures. Therefore, existing structures which may not have any ignition-resistant construction are not affected by this table.

But for new construction, this provision is at minimum vague and confusing; and then it creates a situation which is nearly impossible to properly enforce for the life of the structure. The provision in the table is based on 150% times a conforming defensible space, and Footnote c directs the user to Section 603. However, this is not clear whether the provision applies to defensible space being 150% of the width required in Table 603.2; or if it means the trees within the defensible space are separated 150% of the distance required in Section 603.2.2; or both.

As far as enforcing this provision for the life of the structure, consider Structure X in the WUI. Structure X is located in the Moderate

Hazard area with a conforming water supply. Structure X provides a 150% increase in the distances required in both Table 603.2 and Section 603.2.2, so at the time of construction ignition-resistant building materials are not required. This design complies with Table 503.1 at the time of construction. Three years later, the code official is conducting an inspection of the area for maintenance of the defensible space. The code official will not be aware of the fact that the structure was required to maintain a 45' defensible space, so the code official will require the 30' defensible space requirement similar to all other structures in the Moderate Hazard area.

The only way to determine whether an owner must provide 150% of defensible space is to go back to the original plans and research the applicable code at the time of construction, then determine if the construction of the structure complies or not. While this is a valid avenue for enforcement, we all know that this amount of effort will not be put into every inspection. In fact, I would not be surprised if it is not put into **any** inspection. Most likely, the inspector will simply require the conforming distance as he/she did on every adjacent neighbor. In this fashion, it is an easier inspection; it looks acceptable; and the inspector moves on to next property.

Each year during the spring and early summer, a single WUI inspector can perform hundreds of inspections daily. If the information for a specific lot is not readily available, the provision will be lost. In doing so, the structure now should have been constructed of Class 3 ignition-resistant construction.

Additionally, Structure A is located in the Moderate Hazard area, but was allowed to be constructed with no ignition-resistant construction, not even a fire-resistance-rated roof. The rating of the roof covering is required for Classes 1, 2 and 3 ignition-resistant construction, but Dwelling A did not have to comply since 150% of the defensible space was provided. It is a frequent occurrence that structures are ignited ahead of the fire front by burning embers pushed ahead of the fire and landing on the rooftop. But Dwelling A does not have a rated roof. The 45' defensible space protects from radiant heat and direct flame impingement. The roof is not protected, and Dwelling A is lost when the roof ignites from burning embers.

Some may argue that Dwelling A will be saved because there is a conforming water supply. However, even the best water supply is of no benefit when there are no firefighters available to utilize it. When there are multiple structures needing protection, the Incident Commander will decide where to deploy the firefighters because there are more structures than firefighters and fire engines. Structure A has a 45' defensible space, while others only have the required 30' distance. It is likely that it will be decided that Structure A is less vulnerable because of the increased defensible space and firefighters will be sent to other structures. The water supply does not improve the survivability of Structure A at all in this case.

The concept to allow credit for 150% of the defensible space is flawed and difficult to maintain throughout the life of the structure. The entire row and this allowance should be removed from the code.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This proposal will increase the cost of construction, but only for structures which would have benefited from providing the 150% increase in the defensible space requirements. However, the construction increase will be offset by the one-third reduction in labor for annual pruning and trimming of the vegetation within the defensible space. Utilizing ignition-resistant construction materials will increase the construction cost for the exterior walls, deck and roof by 15%

- Exterior walls: For typical wood-framed exterior walls with standard materials such as 2x4 or 2x6 studs, plywood or OSB sheathing, house wrap, siding (vinyl, wood, or fiber cement), insulation, and interior drywall, the cost can range from $15 to $30 per square foot of wall area. Therefore resulting in an increase ranging from $1.5 dollars to $3.00 a square foot.
- Decks: The cost of building a deck can vary widely based on factors such as size, materials (pressure-treated wood, composite decking, etc.), design complexity, and site conditions. On average, the cost of building a deck can range from $20 to $50 per square foot. Therefore, resulting in an increase ranging from $2.0 dollars to $5.00 a square foot.
- Roofs: Roofing costs depend on factors such as the type of roofing material (asphalt shingles, metal, tile, etc.), roof slope, complexity of the roof design, and regional labor rates. On average, the cost of roofing can range from $3 to $10 per square foot for materials and installation. Therefore, resulting in an increase ranging from $0.30 dollars to $1.00 a square foot.

Estimated Immediate Cost Impact Justification (methodology and variables):

The cost estimates for exterior walls, decks and roofs were obtained from ChatGPT.

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval of the proposal was the desire to retain the 1.5 conforming defensible space row in the table, which was noted to be a viable construction option. (Vote: 9-4)

WUIC23-24

Individual Consideration Agenda

Comment 1:

Proponents: Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com) requests As Submitted

Reason: This code change should be approved as submitted.

Even though there are other proposals that affect this table, if they are not approved, this proposal should be approved. If those other proposals are approved and this line is deleted elsewhere, then that is acceptable. But do not let this row remain in the table in the code. It is an enforcement nightmare.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Comment (CAH2)# 717

WUIC26-24

IWUIC: 503.2.4

Proposed Change as Submitted

Proponents: David Bueche, Hoover Treated Wood Products (dbueche@frtw.com)

2024 International Wildland Urban Interface Code

Revise as follows:

503.2.4 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 (3.2 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 503.2.4.1 through 503.2.4.3. The use of paints, coating, stains, or other surface treatments is not an approved method of protection as required in this section. **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.

Reason: Efforts are being made by manufacturers seeking approval for painted, coated, stains, or other surface-treated wood that require continuous maintenance in lieu of ignition-resistant building materials. This proposed addition will clarify that paints, coating, stains, and other types of products with vulnerable surface coatings are not approved for use as ignition-resistant building materials in the wildland-urban interface (WUI).

This language already exists in the International Building Code in Section 2303.2.2 for fire-retardant-treated wood (FRTW), which is one of the categories of ignition-resistant building materials in IWUIC (503.2.2). It is also in the 2021 IRC, Section R802.1.5.2. This language is in NFPA 1140 Standard for Wildland Fire Protection for FRTW and is also in Chapters 7A and 23 of the California Building Code.

Finally, note that the required testing referenced in 503.2#1 would require ignition-resistant building materials to undergo the same testing as FRTW.

Adding this proposed language to 503.2 adds clarity and conformity to codes affecting WUI communities and ensures that any ignition-resistant material will perform as well as FRTW.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The code is silent on use of coatings and clarification is important.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The opposition to adding a prohibition in the code for these methods. There is no technical substantiation provided in the reason statement and it is being proposed to be added to the wrong section. (Vote: 12-1)

Individual Consideration Agenda

Comment 1:

IWUIC: 503.2, 503.2.2, 503.2.5 (New), 503.2.4.1, 503.2.4.2, 503.2.5.3 (New); IBC: [BF] 2303.2.3

Proponents: Marcelo Hirschler, GBH International, GBH International (mmh@gbhint.com); David Bueche, Hoover Treated Wood Products, Hoover Treated Wood Products (dbueche@frtw.com) requests As Modified by Committee (AMC2)

Replace as follows:

2024 International Wildland Urban Interface Code

503.2 Ignition-resistant building material. Ignition-resistant building materials shall comply with any one of the requirements in Section 503.2.1 through 503.2.5 ~~503.2.4~~.

503.2.2 Fire-retardant-treated wood. Fire-retardant-treated wood shall be identified for exterior use and shall meet the requirements of Section 2303.2 of the *International Building Code*.

Add new text as follows:

503.2.5 Fire-retardant coated wood. 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 material shall bear identification showing the fire test results. The material, 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 503.2.5.1 through 503.2.5.3.

503.2.5.1 Flame spread. The fire-retardant coated wood material shall exhibit a flame spread index not exceeding 25, on both the front and back faces.

503.2.5.2 Flame front. The fire-retardant-coated wood 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, on both the front and back faces.

Add new text as follows:

503.2.5.3 Weathering. The fire-retardant coated wood material shall demonstrate that there is no change in performance under conditions of use by the following procedure. The fire-retardant coated wood material shall be evaluated before and after weathering (including exposure to temperature, moisture and ultraviolet radiation) in accordance with Method A “Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing” in ASTM D2898 and both tests shall meet the performance requirements of Sections 503.2.5.1 and of 503.2.2.

2024 International Building Code

[BF] 2303.2.3 Other means during manufacture. For wood products impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coating, stains or other surface treatments is not an *approved* method of protection as required in this section.

Reason: The key issue that this comment addresses is that any fire-retardant coated wood material intended for use as an ignition resistant building material in the code must be able to provide the appropriate fire protection before and after weathering, something that

the present code does not provide.

During the discussion of the proposal four issues were raised as the reason the proposal was disapproved, as follows. First, it was pointed out that the new sentence proposed for addition to section 503.2.4 should not have been added into that section but should have been added to section 503.2.2. Adding the proposed new sentence to Section 503.2.2 is unnecessary as that section (on FRTW) refers directly to IBC section 2303.2. One of the subsections of IBC 2303.2 is section 2303.2.2 which states as shown in the next paragraph, so that it includes already the proposed new language.

"IBC 2303.2.2 Other means during manufacture. For wood products impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The
treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coating, stains or other surface treatments is not an approved method of protection as required in this section."

Second, it was pointed out that weathering is essential for any ignition resistant building material and that the code only includes weathering for fire-retardant-treated wood, plastic lumber and wood-plastic composite, but not for fire-retardant coated wood. This comment adds a section specifically for fire-retardant coated wood and that new section (503.2.5) includes the requirements to meet the fire test and the requirements for weathering, similar to the requirements for weathering of fire-retardant-treated wood.

Third, it was pointed out that a prohibition for the use of fire-retardant coated materials would disallow future progress, in spite of the fact that evidence was presented (including information regarding a study by NIST (NIST Technical Note 2094, "Effect of Fire-Retardant Coatings and Accelerated-Weathering on the Flammability of Wood-Based Materials in Wildland-Urban Interface (WUI) Communities", by Laura Dubrulle, Mauro Zammarano, and Rick D. Davis; May 12th, 2020, https://doi.org/10.6028/NIST.TN.2094) that none of the existing wood coating materials exhibit sufficient permanence to be able to be used when exposed to the normal weather conditions in WUI areas (including rain). The NIST report is attached.

Fourth, it was pointed out that materials for use in the IWUIC code are all materials intended for use when exposed to the weather (including rain), so that permanence under exposure conditions is essential.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This clarifies that all ignition resistant building materials for use in the IWUIC areas must be equally dealt with in terms of weathering.

Comment (CAH2)# 66

WUIC27-24

IWUIC: SECTION 202 (New), 504.2, 504.2.1 (New), 504.8, 505.2, 505.2.1 (New), 505.8, 506.2, 506.2.1 (New), 506.5 (New), NFPA (New), UL Chapter 07 (New)

Proposed Change as Submitted

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org)

2024 International Wildland Urban Interface Code

Add new definition as follows:

EXTERIOR GLAZED DOOR. An operable opening in the building envelope that contains fixed glazing.

Revise as follows:

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

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

Add new text as follows:

504.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 504.8.

Revise as follows:

504.8 Exterior glazing. Exterior windows, window walls and *exterior glazed doors* ~~glazed door~~ having a glazed area of 25 percent or greater of the door area, windows within exterior doors, and skylights shall be ~~tempered glass,~~ one of the following:
1. Multilayered ~~*multilayered*~~ *glazed panels* containing at least one tempered pane or dome~~.~~; or
2. Glass ~~glass~~ block units; or
3. Have ~~have~~ a minimum fire protection rating of ~~not less than~~ 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test.

505.2 Roof assembly. Roofs shall have a *roof assembly* that complies with not less than a Class A rating when tested in accordance with ASTM E108 or UL 790, or an *approved noncombustible roof covering*. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be 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*.

Add new text as follows:

505.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 505.8.

Revise as follows:

505.8 Exterior glazing. Exterior windows, window walls and ~~glazed doors~~ *exterior glazed doors* having 25 percent or greater of the door area, windows within exterior doors, and skylights shall be ~~tempered glass,~~ one of the following:
1. *Multilayered ~~multilayered~~ glazed panels containing at least one tempered panel or dome~~,~~ ; or*
2. Glass ~~glass~~ block units; or
3. Have ~~have~~ a fire protection rating of ~~not less than~~ 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test..

506.2 Roof assembly. Roofs shall have a *roof assembly* that complies with not less than a Class B rating when tested in accordance with ASTM E108 or UL 790 or an *approved noncombustible roof covering*. For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall be 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*.

Add new text as follows:

506.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 506.5.

506.5 Exterior Glazing. Exterior windows, window walls and e*xterior glazed doors* having a glazed area of 25 percent or greater of the door area, windows within exterior doors, and skylights shall be one of the following:

1. *Multilayered glazed panels* contain at least one tempered pane; or
2. Glass block units; or
3. Have a minimum fire protection rating of 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test.

Add new standard(s) as follows:

NFPA

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

257-2022 Standard on Fire Test for Window and Glass Block Assemblies

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

9-2009 Fire Tests of Window Assemblies, with Revisions through March 2020

Reason: This proposal provides a definition for “exterior glazed door” to clearly explain this is an exterior door with fixed glazing, commonly referred to as a door lite. Within the Class fire-ignition requirements, the minimum percentage of glazing that would trigger certain requirements is then provided in the sections 504.8, 505.8 and 506.8. Fixed glazing relates to the glazing itself and does not imply that the door is not operable. Further, a glazed door includes various types of doors, including sliding glass doors, side hinged doors, or folding door systems.

In all WUI classes of construction, this proposed requires a least one pane of tempered glass, which has been shown to be effective in the performance to resist fire intrusion. It also adds the NFPA 257 and UL 9 when testing to the fire protection rating but for exempting the hose stream test, which is also exempted in the IBC. The markings to determine NFPA or UL compliance are found within the IBC. The proposal then adds the same exterior glazing requirements Class 3 WUI construction, which currently has no exterior glazing requirements.

The remaining editorial changes are intended to provide needed clarity to prevent misinterpretations of what is required. Those changes are as follows:

1. Adds a pointer under roof assembly for skylights, tubular daylighting devices and sloped glazing, in order to prevent any confusion that

these products fall under roof assembly compliance.

2. Makes formatting edits to the exterior glazing sections so it is clear that one of the three options must be chosen.

FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

Eliminating the option of allowing single-pane tempered that has been in the IWUIC since 2003, will increase costs for manufacturers shifting to provide multilayered glazed panels with at least one tempered pane. Multilayered glazed panels are readily available in the industry and being installed to meet other code requirements. However, this proposal will increase the cost per lite of glass (minimum of on tempered pane); and, when that cost is aggregated to the overall cost of the window, it is estimated to be at least 20% more than annealed glass and the actual cost depends on the size and complexity of the fenestration project.

Based upon a typical window size and a house with 20 windows and a typical cost range of $700-$1,000 per installed window, this would be about a $2,800-$4,000 total increase.

Further, multilayered glazed panels (i.e. insulating glazing), with at least one tempered pane is a makeup that is not designed for meeting full safety glazing requirements in hazardous locations. This new makeup for the IWUIC is available from only some manufacturers that have been meeting California Code requirements for the last five California code cycles.

The proposal provides for options to meet the exterior glazing requirements laid out. If the NFPA or UL testing option is chosen, there will be an increase in cost associated with this testing because it is not currently a common approach that manufacturers utilize.

Estimated Immediate Cost Impact Justification (methodology and variables):

The above cost estimate was determined from: https://www.forbes.com/home-improvement/windows/floor-to-ceiling-windows-cost/

For manufacturers who have not been manufacturing product for California requirements, the cost will be higher to comply with multilayered glazed panels with at least one tempered pane than for those manufacturers who have been producing this product at a greater rate for California compliance.

One of the options to meet the exterior glazing requirements will be an increase in cost for manufacturers to proceed with the testing to either the UL or NFPA standard; however, many may choose to utilize the other options that are currently in the IWUIC, eliminating that cost increase.

WUIC27-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval of the proposal was the need for additional revisions to be made including the referenced standards in the modifications. (Vote: 12-0)

WUIC27-24

Individual Consideration Agenda

Comment 1:

IWUIC: SECTION 202, 504.2.1 (New), 504.8, 505.2.1, 505.8, 506.2.1, 506.5 (New), NFPA (New), UL Chapter 07 (New)

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

~~EXTERIOR~~ GLAZED DOOR. An ~~operable opening in the building envelope that contains fixed glazing.~~exterior door having a glazed area of 25 percent or greater of the door.

Add new text as follows:

504.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 504.8.

Revise as follows:

504.8 Exterior glazing. Exterior windows, window walls, ~~and *exterior glazed doors* having a glazed area of 25 percent or greater of the door area~~, windows within exterior doors, and skylights shall be one of the following:

1. Multilayered *glazed panels* containing at least one tempered pane
2. Glass block units
3. Have a minimum fire door or fire window fire protection rating of not less than 20 minutes when tested without the hose stream test in accordance with NFPA 252, UL 10B, or UL 10C, or in accordance with NFPA 257 or UL9, as appropriate.

1. ~~Multilayered *glazed panels* containing at least one tempered pane or dome; or~~
2. ~~Glass block units; or~~
3. ~~Have a minimum fire protection rating of 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test..~~

505.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 505.8.

505.8 Exterior glazing. Exterior windows, window walls, ~~and *exterior glazed doors* having 25 percent or greater of the door area~~, windows within exterior doors, and skylights shall be one of the following:

1. Multilayered *glazed panels* containing at least one tempered pane
2. Glass block units

3. Have a fire door or fire window fire protection rating of not less than 20 minutes when tested without the hose stream test in accordance with NFPA 252, UL 10B, or UL 10C, or in accordance with NFPA 257 or UL9, as appropriate.

~~1. *Multilayered glazed panels containing at least one tempered panel or dome* ; or~~

~~2. Glass block units; or~~

~~3. Have a fire protection rating of 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test..~~

506.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 506.5.

Add new text as follows:

506.5 Exterior Glazing. Exterior windows, window walls, *glazed doors* , windows within exterior doors, and skylights shall comply with one of the following:

1. *Multilayered glazed panels* containing at least one tempered pane
2. Glass block units
3. Have a minimum fire door or fire window fire protection rating of not less than 20 minutes when tested without the hose stream test in accordance with NFPA 252, UL 10B, or UL 10C, or in accordance with NFPA 257 or UL9, as appropriate.

Add new standard(s) as follows:

NFPA

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

252-2022	Standard Methods of Fire Tests of Door Assemblies
257-2022	Standard on Fire Test for Window and Glass Block Assemblies

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

9-2009	Fire Tests of Window Assemblies, with Revisions through March 2020
10A - 2009	Tin Clad Fire Doors—with Revisions through July 20, 2018
10B-2008	Fire Tests of Door Assemblies—with Revisions through May 2020

Reason: The Committee disapproved this proposal because of the need for additional revisions, including several technical deficiencies in the fire test standards referenced in the original proposal. This Public Comment corrects those deficiencies.

First, the definition is updated to align how "glazed door" is defined in the industry and in other codes, including the CA code. Having the 25% included is core to the definition, as it makes it clear that if less than that, it is not a glazed door.

The original proposal only referenced NFPA 257, the fire test applicable to fire windows, when it should have also referenced NFPA 252 for fire doors. Additionally, the original proposal inaccurately provided for NFPA 257 fire testing without the hose stream test when NFPA 257 does not permit testing without the hose stream portion of the test.

This Public Comment adds reference to NFPA 252, the test for fire doors, which permits testing without the hose stream, and it corrects the inaccurate hose stream reference to NFPA 257. Finally, the Public Comment includes reference to the correct alternate UL test standards for both NFPA 252 and NFPA 257.

FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**.

Cost Impact: Increase

Estimated Immediate Cost Impact:

Eliminating the option of allowing single-pane tempered that has been in the IWUIC since 2003, will increase costs for manufacturers shifting to provide multilayered glazed panels with at least one tempered pane. Multilayered glazed panels are readily available in the industry and being installed to meet other code requirements. However, this proposal will increase the cost per lite of glass (minimum of on tempered pane); and, when that cost is aggregated to the overall cost of the window, it is estimated to be at least 20% more than annealed glass and the actual cost depends on the size and complexity of the fenestration project. Based upon a typical window size and a house with 20 windows and a typical cost range of $700-$1,000 per installed window, this would be about a $2,800-$4,000 total increase. Further, multilayered glazed panels (i.e. insulating glazing), with at least one tempered pane is a makeup that is not designed for meeting full safety glazing requirements in hazardous locations. This new makeup for the IWUIC is available from only some manufacturers that have been meeting California Code requirements for the last five California code cycles. The proposal provides for options to meet the exterior glazing requirements laid out. If any of the NFPA or UL testing options are chosen, there will be an increase in cost associated with this testing because it is not currently a common approach that manufacturers utilize.

Estimated Immediate Cost Impact Justification (methodology and variables):

The above cost estimate was determined from: https://www.forbes.com/home-improvement/windows/floor-to-ceiling-windows-cost/ For manufacturers who have not been manufacturing product for California requirements, the cost will be higher to comply with multilayered glazed panels with at least one tempered pane than for those manufacturers who have been producing this product at a greater rate for California compliance. One of the options to meet the exterior glazing requirements will be an increase in cost for manufacturers to proceed with the testing to any of the UL or NFPA standards; however, many may choose to utilize the other options that are currently in the IWUIC, eliminating that cost increase.

Comment (CAH2)# 267

Comment 2:

IWUIC: 504.2.1, 505.2.1, 506.2.1

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

504.2.3 ~~504.2.1~~ Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 504.8.

505.2.3 ~~505.2.1~~ Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 505.8.

506.2.3 ~~506.2.1~~ Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 506.5.

Reason: ARMA's interest in this proposal is the addition of pointers for skylights into roof assembly Sections 504.2, 505.2, and 506.2. The reason statement of the original proposal indicates the pointers are added "to prevent any confusion that these products fall under roof assembly compliance." However, making the pointer the first subsection within the Roof Assembly section calls attention to skylights

rather than reducing confusion. This comment moves the new skylight pointers to be the last subsection in the Roof Assembly sections. Doing so reduces the implication that skylights are the most important subsection.

Note that the renumbered subsections are shown as "point 3." This is to coordinate with WUIC30-24, which was approved as modified during the first Committee Action Hearing. WUIC30-24 adds a new subsection "point 2" in 504.2, 505.2, and 506.2. The intention is for the skylight pointer subsections to be the last sections within the respective Roof Assembly sections.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This comment rearranges sections without making any technical changes. There will be no impact on the cost of construction.

Comment (CAH2)# 286

WUIC28-24

IWUIC: SECTION 202 (New), 504.2.1 (New), 504.8, 505.2.1 (New), 505.8, 506.2.1 (New), 506.5 (New), NFPA (New), UL Chapter 07 (New)

Proposed Change as Submitted

Proponents: Jennifer Hatfield, J. Hatfield & Associates, Fenestration & Glazing Industry Alliance (formerly AAMA) (jen@jhatfieldandassociates.com); Cesar Lujan, Window & Door Manufacturers Association (clujan@wdma.com)

2024 International Wildland Urban Interface Code

Add new definition as follows:

GLAZED DOOR. Exterior door having a glazed area of 25 percent or greater of the area of the door.

Add new text as follows:

504.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 504.8

Revise as follows:

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

1. *Multilayered glazed panels* containing at least one tempered pane.
2. Glass block units.
3. Have a fire protection rating of not less than 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test.

Add new text as follows:

505.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 505.8

Revise as follows:

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

1. *Multilayered glazed panels* containing at least one tempered pane.
2. Glass block units.
3. Have a fire protection rating of not less than 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test.

Add new text as follows:

506.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 506.5.

506.5 Exterior glazing. Exterior windows, window walls and *glazed doors*, windows within exterior doors, and skylights shall be one of the following:

1. *Multilayered glazed panels* containing at least one tempered pane.

2. Glass block units.

3. Have a fire protection rating of not less than 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test.

Add new standard(s) as follows:

NFPA

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

257--22 Standard on Fire Test for Window and Glass Block Assemblies

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

9--2009 Fire Tests of Window Assemblies--with Revisions through March 2020

Reason: This proposal adds a definition for a glazed door in order to provide needed clarity and consistency in what is considered a glazed door, for the purposes of the exterior glazing requirements found in Class 1 and 2, as well as the new Class 3 requirements being proposed. This definition stems from the California Code.

In Class 1 and 2 ignitition-resistant construction, this proposed change eliminates a single pane tempered glass, which has been shown to not be as effective in fire barrier performance. It also adds the NFPA 257 Standard on Fire Test for Window and Glass Block Assemblies and UL 9 Fire Tests of Window Assemblies Standard when testing to the fire protection rating, but for exempting the hose stream test that is included in both standards. The hose stream test is also exempted in section 716.2.5.3 of the IBC. The markings to determine NFPA or UL compliance are found within the IBC, as both of these standards are already referenced and utilized in the IBC.

The proposal then adds the same revised exterior glazing requirements for Class 1 and 2 to Class 3 ignitition-resistant construction, which currently has no exterior glazing requirements. These Class revisions stem from the California Building and Residential Code and requirements in their Wildland Urban Interface Chapter.

The remaining changes are intended to provide needed clarity to prevent misinterpretations of what is required. Those changes are as follows:

- Adds a new subsection under Class 1, 2 and 3 roof assembly sections for skylights, tubular daylighting devices and sloped glazing. This pointer is to prevent any confusion that these products fall under roof assembly compliance.
- Makes formatting edits to the exterior glazing sections so it is clear that ONE of the now three options must be chosen.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

Eliminating the option of allowing single-pane tempered that has been in the IWUIC sine 2003, will increase the costs for manufacturers shifting to provide multilayered glazed panels with at least one tempered pane. However, multilayered glazed panels are readily available in the industry and being installed to meet other code requirements. This proposal will increase the cost per lite of glass (minimum of one tempered pane); and, when that cost is aggregated to the overall cost of the window, it is estimated to be at least 20% more than annealed glass and the actual cost depends on the size and complexity of the fenestration project.

Based upon a typical window size and a house with 20 windows and a typical cost range of $700-$1,000 per installed window, this would be about a $2,800-$4,000 total increase.

Further, multilayered glazed panels (i.e. insulating glazing), with at least one tempered pane is a makeup that is not designed for meeting full safety glazing requirements in hazardous locations. This new makeup for the IWUIC is available from only some manufacturers that have been meeting California Code requirements for the last five California code cycles.

The proposal provides for options to meet the exterior glazing requirements laid out. If the NFPA standard or UL standard testing option is chosen, there will be an increase in cost associated with this testing because it is not currently a common approach that manufacturers utilize.

Estimated Immediate Cost Impact Justification (methodology and variables):

The above cost estimate was determined from: https://www.forbes.com/home-improvement/windows/floor-to-ceiling-windows-cost/

For manufacturers who have not been manufacturing product for California requirements, the cost will be higher to comply with multilayered glazed panels with at least one tempered pane than for those manufacturers who have been producing this product at a greater rate for California compliance.

One of the options to meet the exterior glazing requirements will be an increase in cost for manufacturers to proceed with the testing to either the UL 9 or NGPA 257 standard; however, many may choose to utilize the other options that are currently in the IWUIC, eliminating that cost increase.

WUIC28-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval of the proposal was the same as the reason for WUIC27. (Vote: 11-0)

WUIC28-24

Individual Consideration Agenda

Comment 1:

IWUIC: SECTION 202, 504.2.1, 504.8, 505.2.1, 505.8, 506.2.1, 506.5, NFPA (New), UL Chapter 07 (New)

Proponents: Jennifer Hatfield, J. Hatfield & Associates, Fenestration & Glazing Industry Alliance (formerly AAMA) (jen@jhatfieldandassociates.com); Cesar Lujan, Window & Door Manufacturers Association (clujan@wdma.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

GLAZED DOOR. Exterior door having a glazed area of 25 percent or greater of the area of the door.

Revise as follows:

504.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 504.8

504.8 Exterior glazing. Exterior windows, window walls and glazed doors, windows within exterior doors, and skylights shall be one of the following:

1. *Multilayered glazed panels* containing at least one tempered pane.
2. Glass block units.
3. Have a minimum fire door or fire window protection rating of not less than 20 minutes when tested without the hose stream test in accordance with NFPA 252, UL10B, or UL10C, or in accordance with NFPA 257 or UL 9, as appropriate ~~and shall be exempt from the hose stream test~~.

505.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 505.8

505.8 Exterior glazing. Exterior windows, window walls and *glazed doors*, windows within exterior doors, and skylights shall be one of the following:

1. *Multilayered glazed panels* containing at least one tempered pane.
2. Glass block units.
3. Have a minimum fire door or fire window protection rating of not less than 20 minutes when tested without the hose stream test in accordance with NFPA 252, UL10B, or UL10C, or in accordance with NFPA 257 or UL 9, as appropriate ~~and shall be exempt from the hose stream test~~.

506.2.1 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 506.5.

506.5 Exterior glazing. Exterior windows, window walls and *glazed doors*, windows within exterior doors, and skylights shall be one of the following:

1. *Multilayered glazed panels* containing at least one tempered pane.
2. Glass block units.
3. Have a minimum fire door or fire window protection rating of not less than 20 minutes when tested without the hose stream test in accordance with NFPA 252, UL10B, or UL10C, or in accordance with NFPA 257 or UL 9, as appropriate ~~and shall be exempt from the hose stream test~~.

Add new standard(s) as follows:

NFPA

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

252--22	Standard Methods of Fire Tests of Door Assemblies

Add new text as follows:

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

10B--2008	Fire Tests of Door Assemblies--with Revisions through May 2020

Add new standard(s) as follows:

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

10C--2016 Positive Pressure Fire Tests of Door Assemblies--with Revisions through May 2021

Reason: The Committee disapproved this proposal because of several technical deficiencies in the fire test standards referenced in the original proposal. This Public Comment corrects those deficiencies.

The original proposal only referenced NFPA 257, the fire test applicable to fire windows, when it should have also referenced NFPA 252 for fire doors. Additionally, the original proposal inaccurately provided for NFPA 257 fire testing without the hose stream test when NFPA 257 does not permit testing without the hose stream portion of the test.This Public Comment adds reference to NFPA 252, the test for fire doors, which permits testing without the hose stream, and it corrects the inaccurate hose stream reference to NFPA 257. Finally, the Public Comment includes reference to the correct alternate UL test standards for both NFPA 252 and NFPA 257.

Cost Impact: Increase

Estimated Immediate Cost Impact:

Eliminating the option of allowing single-pane tempered that has been in the IWUIC since 2003, will increase costs for manufacturers shifting to provide multilayered glazed panels with at least one tempered pane. Multilayered glazed panels are readily available in the industry and being installed to meet other code requirements. However, this proposal will increase the cost per lite of glass (minimum of on tempered pane); and, when that cost is aggregated to the overall cost of the window, it is estimated to be at least 20% more than annealed glass and the actual cost depends on the size and complexity of the fenestration project. Based upon a typical window size and a house with 20 windows and a typical cost range of $700-$1,000 per installed window, this would be about a $2,800-$4,000 total increase. Further, multilayered glazed panels (i.e. insulating glazing), with at least one tempered pane is a makeup that is not designed for meeting full safety glazing requirements in hazardous locations. This new makeup for the IWUIC is available from only some manufacturers that have been meeting California Code requirements for the last five California code cycles. The proposal provides for options to meet the exterior glazing requirements laid out. If any of the NFPA or UL testing options are chosen, there will be an increase in cost associated with this testing because it is not currently a common approach that manufacturers utilize.

Estimated Immediate Cost Impact Justification (methodology and variables):

The above cost estimate was determined from: https://www.forbes.com/home-improvement/windows/floor-to-ceiling-windows-cost/

For manufacturers who have not been manufacturing product for California requirements, the cost will be higher to comply with multilayered glazed panels with at least one tempered pane than for those manufacturers who have been producing this product at a greater rate for California compliance. One of the options to meet the exterior glazing requirements will be an increase in cost for manufacturers to proceed with the testing to any of the UL or NFPA standards listed; however, many may choose to utilize the other options that are currently in the IWUIC, eliminating that cost increase.

Comment (CAH2)# 228

Comment 2:

IWUIC: 504.2.1, 505.2.1, 506.2.1

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

504.2.3 ~~**504.2.1**~~ **Skylights.** Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 504.8

505.2.3 ~~**505.2.1**~~ **Skylights.** Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 505.8

506.2.3 ~~**506.2.1**~~ **Skylights.** Skylights, including tubular daylighting devices and sloped glazing shall comply with Section 506.5.

Reason: ARMA's interest in this proposal is the addition of pointers for skylights into roof assembly Sections 504.2, 505.2, and 506.2. The reason statement of the original proposal indicates the pointers are added "to prevent any confusion that these products fall under roof assembly compliance." However, making the pointer the first subsection within the Roof Assembly section calls attention to skylights rather than reducing confusion. This comment moves the new skylight pointers to be the last subsection in the Roof Assembly sections. Doing so reduces the implication that skylights are the most important subsection.

Note that the renumbered subsections are shown as "point 3." This is to coordinate with WUIC30-24, which was approved as modified during the first Committee Action Hearing. WUIC30-24 adds a new subsection "point 2" in 504.2, 505.2, and 506.2. The intention is for the skylight pointer subsections to be the last sections within the respective Roof Assembly sections.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This comment rearranges sections without making any technical changes. There will be no impact on the cost of construction.

Comment (CAH2)# 285

WUIC36-24

IWUIC: SECTION 202 (New), 504.5, 504.5.1 (New), 504.5.2 (New), 504.5.1

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Add new definition as follows:

EXTERIOR SURFACES. Weather-exposed surfaces.

EXTERIOR WALL. A wall, bearing or nonbearing, that is used as an enclosing wall for a building, other than a fire wall, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.

Revise as follows:

504.5 Exterior walls. Where defensible space conforms to the provisions of Section 603, exterior~~Exterior~~ walls of buildings or structures shall be constructed in accordance with Section 504.5.1 or Section 504.5.2.
Where defensible space does not conform to the provisions of Section 603, exterior walls of buildings or structures shall be constructed in accordance with Section 504.5.1 and Section 504.5.2.

Flashing shall be applied in accordance with Section 504.5.3. ~~one of the following methods:~~

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

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

Add new text as follows:

504.5.1 Exterior wall assemblies. Exterior wall assemblies of buildings or structures shall have a minimum of 1-hour fire-resistance-rating, rated for exposure on the exterior side in accordance with Section 501.3.
The exposed bottom edge of combustible sheathing shall be protected with noncombustible building material with a minimum assigned protection time of 40 minutes, or the sheathing shall be inset to rest directly on the foundation.

Exception: The bottom edge of exposed combustible sheathing is permitted to be covered with corrosion-resistant metal flashing provided there is an air gap of at least 1 inch between the metal flashing and the bottom edge of the combustible sheathing. Both legs of the flashing shall be attached a maximum of 6 inches (152.4 mm) on center.

504.5.2 Exterior surfaces. The exterior surfaces shall be constructed in accordance with one or more of the followings:

1. Approved noncombustible materials complying with Section 503.2.1.

2. Fire-retardant-treated wood complying with Section 503.2.2.

3. Ignition-resistant building materials complying with Section 503.2.4.

Revise as follows:

~~**504.5.1**~~ **504.5.3 Flashing.** A minimum of 6 inches (152 mm) of metal flashing or noncombustible material applied vertically on the exterior of the wall shall be installed at the ground, decking and roof intersections.

Reason: Table 503.1 requires the use of Ignition Resistant Construction Class 1 (IR1) in situations where defensible space is nonconforming. In such scenarios during a wildfire, the exterior walls of the structure may be exposed to embers, radiation heat, and direct flame exposures. Accordingly, the exterior wall assembly needs to provide a minimum resistance against these exposures. intermediate-scale, and full-scale experiments performed at the IBHS Research Center illustrate that the current requirements do not provide the needed resistance against wildfire exposures. Section 504.5 provides 5 alternatives for construction of exterior walls:

1. Materials approved for not less than 1-hour fire-resistance-rated (FRR) construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction.
4. Fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.
5. Ignition-resistant materials complying with Section 503.2 on the exterior side. According to section 503.2 ignition-resistant materials include the followings: noncombustible, FRTW and IR building materials.

There is a notable inconsistency in the current alternatives for exterior walls of this class of construction, particularly in terms of resistance against fire impingement and flame spread. The first method permits 1-hour FRR construction when tested in accordance with ASTM E119 or UL 263. In this test the wall assembly is tested without a siding material, and it is possible to have 1-hour FRR wall assembly with different combustible siding materials and different rates of flame spread on the exterior surface. Therefore, there is significant risk of fire spreading to other sections of the building, including eaves, roofs, and openings (vents, windows, doors), with less restrictive fire resistance requirements. Figure 1 displays a moment captured during the wind-driven fire spread tests conducted at the IBHS research center at the separation distance of 20 ft. The "source structure" comprises metal and wooden sheds containing 15, 6-A wood cribs (UL 711 standard cribs). The “target structure” is a one-and-a-half-story residential structure featuring an open eave, double-pane tempered windows, and a one-hour-rated exterior wall. The cladding consists of a combination of combustible engineered wood siding material on left side and fiber cement panels on the right. Both structures face a nominal wind speed of 35 mph, and the thermal impact on the target building is observed using heat flux gauges, thermocouples, and cameras. As can be seen in Figure 1, about 10 minutes after a point ignition inside the shed, the target building ignited and within the next few seconds, the fire could spread on the surface causing severing damage to the eaves, vents, and windows. The test was terminated after a minute due to safety reasons. In this test the target structure had 1-hr FRR from exterior. The dark gray siding was fiber cement board (noncombustible siding) while the light gray siding was engineered wood (combustible) siding material.

Figure 1. a. The test setup for wind driven building to building fire spread tests. The target building has an hour fire resistant rated wall assembly.

Figure 1. b. ignition of the combustible siding.

Figure 1. c. fire spread on the surface and flames touching all components in about 10 seconds on left side.

Figure 1. d. after suppression; severe damage can be seen on all components on the left-side.

Another concern with 1-hour FRR alone is the wide range of wall assemblies that can meet the performance requirements of ASTM E119. Figure 2 shows two different wall assemblies that achieve 1-hr FRR from either side.

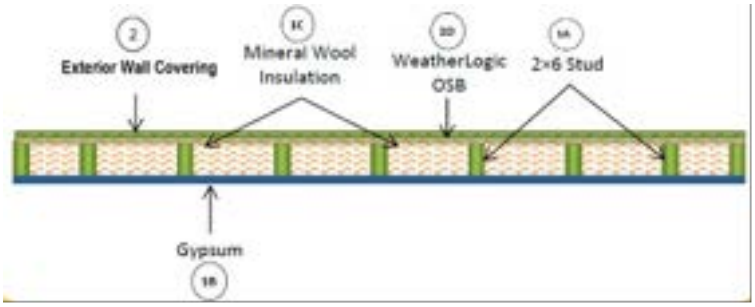

Figure 2. *a.* 1-hour fire resistance rated exterior wall with *OSB sheathing panel on the exterior side [1].*

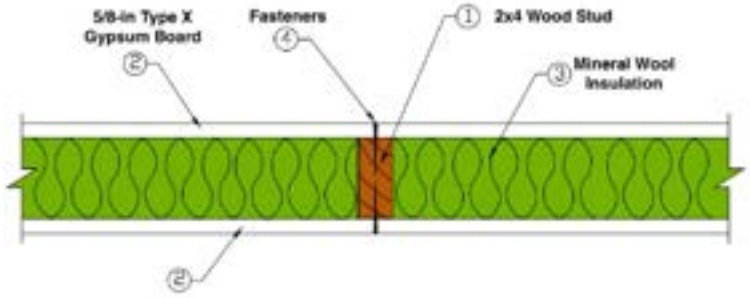

Figure 2. b. 1-hour fire resistance rated exterior wall with *Type X gypsum board on the exterior side [2].*

While Figure 2a and 2b both qualify as 1-hr FRR construction, the assembly in Figure 2a is particularly vulnerable to wildfire exposure at the base because combustible sheathing material is used in the assembly. Figure 3 shows a series of fire tests conducted at the IBHS Research Center where different configurations of 1-hour fire-resistant rated assembly with combustible engineered wood siding material were exposed to a small fire at the base. Figure 3a is about a typical 1-hour fire-resistant rated assembly constructed with OSB sheathing material. In this test the OSB sheathing material is exposed from bottom. During this experiment, the fire spread across the surface of the combustible exterior siding and impinged inside the wall cavity because of the exposed bottom surface of OSB sheathing material. Figure 3b shows a 1-hour fire-resistant rated assembly constructed with noncombustible sheathing material in accordance with Figure 2b. In this experiment the fire only ignited the combustible engineered wood siding material and did not impinge inside the wall assembly.

Figure 3. a. 1-hr FRR assembly with unprotected OSB Sheathing material at the bas3. Photo curtesy by Milad Shabanian, IBHS.

Figure 3. b. 1-hr FRR assembly with noncombustible sheathing material. Photo curtesy by Milad Shabanian, IBHS.

Item 2 of Section 504.5 permits the use of noncombustible materials. While this construction method provides comprehensive protection against fire spread, it does not specifically address the fire resistance rating and protection against fire impingement. Item 3 permits the use of heavy timber or log wall construction suggesting they offer similar protection. However, Section 602.4.4 in the IBC requires exterior walls of heavy timber construction to be noncombustible, which arguably aligns more appropriately with Item 2 or constructed

with FRTW or cross-laminated timber. In case that the exterior walls constructed with cross-laminated timber and heavy timber elements the exterior surface of such element shall be protected with: FRTW, Gypsum board or noncombustible materials.

In contrast, log wall construction technically aligns more with Item 1. According to Section 303 of ICC 400, 6-inch-thick logs can provide a 1-hour fire resistance against fire impingement. However, given their combustible nature, log wall constructions may exhibit varying fire spread rates, influenced by the different flame spread indices associated with various wood species.

Items 4 and 5 do not explicitly address fire impingement. These methods are only intended to limit the flame spread index of exterior surfaces. Figure 4 illustrates two typical exterior wall assembly constructed with ignition-resistant building material. Figure 4a is a typical exterior wall assembly protected on the exterior with noncombustible metal siding and Figure 4b is a wall protected with noncombustible fiber cement lap siding material.

Figure 4. a. Typical exterior wall assemblies constructed on the exterior with noncombustible metal siding. Photo curtesy by Milad Shabanian, IBHS.

Figure 4. b. Typical exterior wall assemblies constructed on the exterior with noncombustible fiber cement siding material. Photo curtesy by Milad Shabanian, IBHS.

An additional inconsistency in the IWUIC is that requirements for exterior wall construction are the same for IR1 and IR2. This is clearly a discrepancy as IR1 construction is required in conditions more severe than those requiring IR2 construction in Table 503.1.

This proposed code change will increase the level of fire protection and provide a more logical and consistent level of performance for exterior wall assemblies against fire impingement and flame spread for IR1 where defensible space is nonconforming by:

- Requiring a minimum of 1 hr. fire resistance rating for all exterior wall assemblies to address fire impingement, and,
- Limiting the flame spread index of exterior siding materials to address flame spread to other areas of the building.

Note: IBC is the source of all suggested definitions.

Bibliography:

1. INTERTEK DIRECTORY OF BUILDING PRODUCTS, Louisiana-Pacific - LP WeatherLogic® Air & Water Barrier Fire Performance, https://bpdirectory.intertek.com/pages/DLP_SearchDetail.aspx?SpecID=67818

2. Design for code acceptance 3, American Wood Council, Fire-resistance-rated wood-frame wall and floor/ceiling assemblies. https://awc.org/wp-content/uploads/2021/12/awc-dca3_20210209_awcwebsite.pdf

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This modification to the code will raise construction costs by introducing two stipulations for exterior walls.
According to research performed by IBHS and Headwaters Economics in 2022 [3], replacing a wooden composite cladding of a 1-hr fire rated wall assembly with fiber cement lap siding would increase the construction cost $1.38 per square foot in northern California. To attain a 1-hour fire-rated wall assembly for a wall constructed with noncombustible siding, the addition of 5/8-inch type X gypsum sheathing behind the siding is necessary, incurring an additional cost of approximately $0.40 per square foot.

Estimated Immediate Cost Impact Justification (methodology and variables):

The existing code mandates that exterior walls should be built with either a one-hour fire-resistant rated assembly or an ignition-resistant exterior surface. In contrast, the proposed amendment will necessitate exterior walls to be constructed with both a one-hour fire-resistant rated assembly and an ignition-resistant exterior surface where provisions of Section 603 (defensible space requirement) are not met.

Bibliography

[3] Headwaters Economics and Insurance Institute for Business & Home Safety, 2022, Construction costs for a wildfire-resistant home, California Edition. https://headwaterseconomics.org/wp-content/uploads/2022_HE_IBHS_WildfireConstruction.pdf

WUIC36-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for disapproval of the proposal were: Concerns about the new proposed definition of exterior surfaces regarding weather-exposed surfaces. Specifically, that there are degrees of weather exposure including all sorts of different types of exposure including being subject to sun, rain, and moisture. There was also expressed concern about the 40-minute test requirement. (Vote: 13-0)

WUIC36-24

Individual Consideration Agenda

Comment 1:

IWUIC: SECTION 202, 504.5, 504.5.1, 504.5.2, 504.5.3

Proponents: Milad Shabanian, Insurance Institute for Buisness & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Delete without substitution:

~~**EXTERIOR SURFACES.** Weather-exposed surfaces.~~

~~**EXTERIOR WALL.** A wall, bearing or nonbearing, that is used as an enclosing wall for a building, other than a fire wall, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.~~

504.5 Exterior walls. Where defensible space conforms to the provisions of Section 603, exterior walls of buildings or structures shall be constructed in accordance with Section 504.5.1 or Section 504.5.2.
Where defensible space does not conform to the provisions of Section 603, exterior walls of buildings or structures shall be constructed in accordance with Section 504.5.1 and Section 504.5.2.

Flashing shall be applied in accordance with Section 504.5.3.

Revise as follows:

504.5.1 Exterior wall assemblies. Exterior wall assemblies of buildings or structures shall have a minimum of 1-hour fire-resistance-rating, rated for exposure on the exterior side ~~in accordance with Section 501.3~~.
~~The exposed bottom edge of combustible sheathing shall be protected with noncombustible building material with a minimum assigned protection time of 40 minutes, or the sheathing shall be inset to rest directly on the foundation.~~

~~**Exception:** The bottom edge of exposed combustible sheathing is permitted to be covered with corrosion-resistant metal flashing provided there is an air gap of at least 1 inch between the metal flashing and the bottom edge of the combustible sheathing. Both legs of the flashing shall be attached a maximum of 6 inches (152.4 mm) on center.~~

504.5.2 Exterior wall covering ~~surfaces~~ . The exterior wall covering~~surfaces~~ shall be constructedwith *ignition-resistant building materials* in accordance with Section 503.2.

Exception: Exterior walls of heavy timber or log wall construction.

~~in accordance with one or more of the followings:~~

1. ~~Approved noncombustible materials complying with Section 503.2.1.~~
2. ~~Fire-retardant treated wood complying with Section 503.2.2.~~
3. ~~Ignition-resistant building materials complying with Section 503.2.4.~~

504.5.3 Flashing. A minimum of 6 inches (152 mm) of metal flashing or noncombustible material applied vertically on the exterior of the wall shall be installed at the ground, decking and roof intersections.

Reason: The primary objective of WUIC 36-24 is to address the performance of exterior walls against wildfire and direct flame exposure for buildings with and without the required defensible space. During the first committee action hearings, three key concerns were raised by the committee and opponents, which this comment aims to address.

- The first concern pertains to the definition of ‘exterior surfaces’ that was proposed to be added. Historically, the term has been used in Table 503.1 since 1997, and WUIC 36-24 sought to maintain consistency by using the same terminology. However, WUIC20-24, which was Approved as Modified during the first committee action hearings, changed to the the term to ‘exterior wall covering.’ Consequently, the proposed definition has been aligned with WUIC20-24.
- The second concern pertained requiring 40-minute protection for the exposed bottom edge of combustible sheathing on exterior walls. Although the proposed change contains language consistent with the International Building Code (IBC) and two option were provided, it was decided to remove this requirement with this comment. The plan is to collaborate with opponents and reintroduce it later.
- Lastly, an exception has been added specifically for heavy timber and log wall constructions to address concerns raised by the committee and others. This aligns the proposal with WUIC20-24, which exempts heavy timber and log wall construction from requiring noncombustible exterior wall coverings under the most severe wildfire conditions. Consequently, this comment ensures consistency in exterior wall requirements within IR1 and is consistent with WUIC20-24.

Cost Impact: Increase

Estimated Immediate Cost Impact:

This modification to the code will raise construction costs by introducing two stipulations for exterior walls.
According to research performed by IBHS and Headwaters Economics in 2022 [1], replacing a wooden composite cladding of a 1-hr fire rated wall assembly with fiber cement lap siding would increase the construction cost $1.38 per square foot in northern California. To attain a 1-hour fire-rated wall assembly for a wall constructed with noncombustible siding, the addition of 5/8-inch type X gypsum sheathing behind the siding is necessary, incurring an additional cost of approximately $0.40 per square foot.

[1] Headwaters Economics and Insurance Institute for Business & Home Safety, 2022, Construction costs for a wildfire-resistant home, California Edition. https://headwaterseconomics.org/wp-content/uploads/2022_HE_IBHS_WildfireConstruction.pdf

Estimated Immediate Cost Impact Justification (methodology and variables):

The existing code mandates that exterior walls should be built with either a one-hour fire-resistant rated assembly or an ignition-resistant exterior surface. In contrast, the proposed amendment will necessitate exterior walls to be constructed with both a one-hour fire-resistant rated assembly and an ignition-resistant exterior surface where provisions of Section 603 (defensible space requirement) are not met.

Comment (CAH2)# 54

WUIC37-24

IWUIC: 504.6

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Revise as follows:

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

1. Where defensible space conforms to the provisions of Section 603, complete ~~Complete~~ enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed with one of the following: ~~protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant treated wood. The fire-retardant treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.~~

   1.1 Exterior 1-hour fire-resistance-rated construction.

   1.2. Noncombustible material.

   1.3. Heavy timber or log wall construction.

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

   1.5. Ignition-resistant building material on the exterior surface.

2. Where defensible space does not conform to the provisions of Section 603, complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction in accordance with Section 501.3 and the exterior surfaces of these assemblies are constructed with one of the following materials:

   2.1. Noncombustible material complying with Section 503.2.1

   2.2. Fire-retardant-treated wood complying with Section 503.2.2

   2.3. Ignition-resistant building materials complying with Section 503.2.4.

Reason: Table 503.1 requires the use of Ignition Resistant Construction Class 1 (IR1) in situations where defensible space is nonconforming. In such conditions, the structure may be exposed to embers, radiation heat, and direct flame contact during a wildfire. Accordingly, the underfloor area of the building needs to provide a minimum resistance against these exposures.

Currently, the exception in section 504.6 provides 3 alternatives for constructing the unenclosed underfloor areas of buildings:

1. Materials approved for not less than 1-hour fire-resistance-rated (FRR) construction on the exterior side.
2. Heavy timber construction
3. Fire-retardant treated wood.

These methods do not provide protection from flame spread during a wildfire. This proposal addresses this issue by creating two

exceptions addressing conditions with nonconforming defensible space and conditions with conforming defensible space.

For the nonconforming defensible space condition, this proposal requires the underside of exposed floors and exposed structural columns, beams and supporting walls to protected with 1-hour fire-resistant-rated construction and also protected on the exterior surfaces by ignition-resistant building materials complying with Section 503.2. This would provide protection from flame impingement and reduce rate of flame spread in areas where defensible space is nonconforming.

For the confirming defensible space condition, this proposal permits the use of the currently specified materials but expands the options to include noncombustible construction, log wall construction, and ignition resistant building materials on the exterior surface consistent with construction methods permitted by other areas in Section 504.

An additional inconsistency is that requirements for underfloor areas in the IWUIC are the same for IR1 and IR2. This is clearly a discrepancy as IR1 construction is required in conditions more severe than those requiring IR2 construction in Table 503.1. This proposed code change will increase the level of fire protection and provide a more logical and consistent level of performance for underfloor areas against fire impingement and flame spread for IR1 where defensible space is nonconforming by:

- Requiring a minimum of 1 hr. fire resistance rating to address fire impingement, and,
- Limiting the flame spread index of exterior surfaces to address flame spread to other areas of the building.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This code change proposal may increase the construction cost only where the underfloor area height is enough to be usable and 1-hour rated columns or walls covered on the exterior with combustible materials having a flame spread index more than 25 when tested in accordance with ASTM E84 (Figure 1). In such a case, the siding material will need to be removed or replaced with an ignition-resistant building material (noncombustible, FRTW, IR material) having a flame spread index less than 25.

According to research performed by IBHS and Headwaters Economics in 2022 [1], replacing a wooden composite cladding with fiber cement lap siding would increase the construction cost $1.38 per square foot in northern California.

Estimated Immediate Cost Impact Justification (methodology and variables):

Bibliography

[1] Headwaters Economics and Insurance Institute for Business & Home Safety, 2022, Construction costs for a wildfire-resistant home, California Edition. https://headwaterseconomics.org/wp-content/uploads/2022_HE_IBHS_WildfireConstruction.pdf

Figure 1. Usable unenclosed underfloor areas.

WUIC37-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval of the proposal was based upon the testimony of proponent that previous actions address the concerns this proposal was attempting trying to address. (Vote: 13-0)

WUIC37-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.6

Proponents: Milad Shabanian, Insurance Institute for Buisness & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5. **~~Exception~~ Exceptions:** ~~Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.~~

1. Where defensible space conforms to the provisions of Section 603, complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected with 1-hour fire-resistance-rated construction or *ignition-resistant building materials* complying with Section 503.2 on the exterior side.
2. Where defensible space does not conform to the provisions of Section 603, complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected with 1-hour fire-resistance-rated construction and *ignition-resistant building materials* complying with Section 503.2 on the exterior side.
3. Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed with heavy timber or log wall construction.

Reason: WUIC 37-24 had three main objectives:

- Address the issue with direct flame contact in nonconforming defensible space conditions.
- Expand alternatives to include noncombustible construction, log wall construction, and ignition-resistant building materials.
- Differentiate underfloor enclosure requirements between IR1 and IR2. Although both provide similar wildfire protection, their risk profiles vary.

During CAH#1, the committee and opponents provided comments on WUIC36-24 which are also applicable to WUIC 37-24. This comment aligns WUIC37-24 with WUIC36-24-SHABANIAN-C1. During CAH#1, concerns were raised with WUIC36-24 regarding the proposed definition "exterior surfaces" and the lack of consideration for log wall construction. This comment ensures alignment between WUIC37-24 and WUIC36-24-SHABANIAN-C1. Specifically, it removes the proposed defintion of exterior surfaces and adds a new exception for heavy timber and log wall construction.

Cost Impact: Increase

Estimated Immediate Cost Impact:

$0 or more. This code change proposal may increase the construction cost only where the underfloor area height is enough to be usable and 1-hour rated columns or walls covered on the exterior with combustible materials having a flame spread index more than 25 when tested in accordance with ASTM E84 (Figure 1). In such a case, the siding material will need to be removed or replaced with an ignitionresistant building material (noncombustible, FRTW, IR material) having a flame spread index less than 25.

Estimated Immediate Cost Impact Justification (methodology and variables):

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Comment (CAH2)# 55

WUIC39-24

IWUIC: 504.6, 505.5.1 (New), 505.6, 506.3 (New), 506.3, 504.5.1

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Revise as follows:

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code. A minimum of 6 inches of noncombustible material or metal flashing extending vertically from grade is required on the exterior of columns and walls.

Add new text as follows:

505.5.1 Flashing. A minimum of 6 inches of noncombustible material or metal flashing extending vertically is required on the exterior of the wall at the ground, decking and roof intersections.

Revise as follows:

505.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground, with exterior walls in accordance with Section 505.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code. A minimum of 6 inches of noncombustible material or metal flashing extending vertically from grade is required on the exterior of columns and walls.

Add new text as follows:

506.3 Exterior walls. A minimum of 6 inches of noncombustible material or metal flashing extending vertically is required on the exterior of the wall at the ground, decking and roof intersections.

Revise as follows:

~~**506.3**~~ **506.4 Underfloor enclosure.** Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 506.3. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction*, fire-retardant-treated wood or *heavy timber construction*. Fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code. A minimum of 6 inches of noncombustible material or metal flashing extending vertically from grade is required on the exterior of columns and walls.

504.5.1 Flashing. A minimum of 6 inches (152 mm) of ~~metal flashing or~~ noncombustible material or metal flashing extending~~applied~~ vertically is required on the exterior of the wall ~~shall be installed~~ at the ground, decking and roof intersections.

Reason: In the 2024 IWUIC, a new section was added to Class 1 ignition resistant construction (IR1) that requires a minimum of 6 inches of metal flashing or noncombustible material applied vertically on the exterior of the wall at the ground, decking and roof

intersections. In a wildfire event, buildings are threatened by at least one of the three fundamental wildfire exposures: embers, radiant heat, or direct flame contact. Of these exposures, ember exposure stands out as a prevalent cause of building ignition. Embers, propelled for miles by the wind, can penetrate small openings and accumulate around buildings, particularly where combustible debris is also present (Figure1).

Figure 1. 6-in noncombustible vertical clearance worked as fuel break at the base of exterior walls in Lahaina wildfire. Photo credit: Steve Hawks, IBHS.

Therefore, this proposal will add protection against embers for all structures in wildfire-prone areas by expanding ember protection requirements in IR1 and adding ember protection for IR2 and IR3. Figure 2 shows a 6-in noncombustible vertical clearance at the base of exterior walls and underfloor columns.

a b

Figure 2. 6-in Noncombustible vertical clearance at the base of exterior walls and underfloor area columns: a. Lahaina Fire 2023 (Photo curtesy Milad Shabanion, IBHS), b. Glass Fire 2020 (Photo curtesy Steve Hawks, IBHS).

The objective of this proposal is to enhance the resilience of buildings in wildfire-prone regions against embers by requiring a 6-inch noncombustible vertical clearance on exterior walls for all ignition resistant construction classes where they intersect with horizontal surfaces such as the ground, decks, and roof assemblies.

This code change intends to improve the protection of a vertical surface where the vertical surface intersects with a horizontal surface. The intersection of a vertical and horizontal surface is a known area where debris tends to accumulate and where embers tend to accumulate during a wildfire. The combination of accumulated debris and embers can ignite the debris, enabling the fire to spread to the vertical surface. The first part of this proposal adds a minimum 6 inches of noncombustible flashing on the exterior walls of Ignition-Resistant Class 2 and 3 constructions at points where exterior walls intersect with horizontal surfaces. The remainder of this proposal extends an equivalent level of ember-resistance to exposed columns and vertical members within unenclosed underfloor areas across all three classes of ignition-resistant construction.

Section 504.5.1 is proposed to be revised to match the language proposed for Sections 504.6, 505.5.1, 505.6, 506.3 and 506.4 and to

provide some clarity. As currently written, Section 504.5.1 could be interpreted to require metal flashing or noncombustible materials on a noncombustible wall such as a concrete or masonry wall. This clearly was not the intent of the original language. The revised language is intended to clarify this.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This code change may increase the construction cost only where the exterior walls intersect with unenclosed projections such as attached decks, balconies, and roofs such as dormers.

Estimated Immediate Cost Impact Justification (methodology and variables):

The noncombustible flashing that needs to be installed instead of exterior siding material in these cases may be cheaper or more expensive than the siding material considering the range of flashing products available in the market. But in general the cost increase will not be significant. A review of common retailers websites indicates that the cost of 6 inch wide metal flashing varies according to the quantity purchased. Galvanized steel metal flashing that is 6 inches wide costs approximately $24.24 for a 50 foot length. This is approximately $0.48 per foot of material. Labor and fastener costs are estimated to be minimal.

WUIC39-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee stated that the reason for the approval of the proposal was that it necessary to work out how the specified material or flashing is to be installed in the locations listed and it is a minimal cost worthwhile detailed addition. (Vote: 11-2)

WUIC39-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.5.1, 505.5.1, 506.3

Proponents: Gary J Ehrlich, NAHB, NAHB (gehrlich@nahb.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.5.1 Flashing. A minimum of 6 inches (152 mm) of noncombustible material or metal flashing extending vertically is required on the exterior of the wall at the ground, decking and roof intersections. Flashing provided in accordance with this section shall be lapped with flashing, counterflashing, or water-resistive barriers as required by the *International Building Code* or *International Residential Code*.

505.5.1 Flashing. A minimum of 6 inches of noncombustible material or metal flashing extending vertically is required on the exterior of the wall at the ground, decking and roof intersections. Flashing provided in accordance with this section shall be lapped with flashing,

counterflashing, or water-resistive barriers as required by the *International Building Code* or *International Residential Code*.

506.3 Exterior walls. A minimum of 6 inches of noncombustible material or metal flashing extending vertically is required on the exterior of the wall at the ground, decking and roof intersections. Flashing provided in accordance with this section shall be lapped with flashing, counterflashing, or water-resistive barriers as required by the *International Building Code* or *International Residential Code.*

Reason: The purpose of this committee comment is to insure any flashing added against the face of an exterior wall at a deck or other projection to comply with this section is properly integrated with flashing and water-resistive barrier materials provided in accordance with the IBC and IRC for moisture protection. Taken literally, the existing language added to the 2024 IWUIC for Class 1 construction, and the proposed language for Class 2 and 3 construction, could lead a builder or contractor to simply install a section of metal flashing or other non-combustible flashing material directly against the face of an exterior wall at a deck or roof intersection and think they are done. While this will provide the desired protection against embers landing on the deck or lower roof, it creates a "reverse shingle" condition that could allow moisture (e.g., from heavy rainfall) to wick down behind the flashing, reach wood framing components, and cause decay that could compromise structural performance. This comment adds language highlighting the need to integrate flashing used for ember protection with other flashing, counterflashing, or water-resistive barriers required at deck, roof and wall intersections for moisture protection. This could be accomplished by providing counterflashing behind the siding that laps over the exterior flashing provided for ember protection or extending a portion of the water-resistive barrier material to lap over the exterior flashing. If necessary, the counterflashing or WRB material can also be ignition-resistant or non-combustible material, or the flashing required by this section can extend through the flashing and the proper lapping accomplished behind the wall cladding.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The IBC and IRC already require flashing at exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections, or other locations where moisture can enter a wall. Further, the IRC explicitly requires flashing to be installed "shingle fashion", specifies details for integration of WRB's and counterflashing with deck ledger flashing, and provides for counterflashing at roof sidewalls. Therefore, this comment simply provides clarification regarding practices already necessary for compliance with the IBC and IRC.

Comment (CAH2)# 233

WUIC42-24

IWUIC: 504.7, 505.7

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org); Jason Smart, American Wood Council (jsmart@awc.org)

2024 International Wildland Urban Interface Code

Revise as follows:

504.7 Appendages and projections. *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. 1-hour *fire-resistance-rated construction.*
2. *Heavy timber construction.*
3. ~~1.~~ *Approved noncombustible* materials.
4. ~~2.~~ Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.
5. ~~3.~~ Ignition-resistant building materials in accordance with Section 503.2. **Exception:** Coated materials shall not be used as the walking surface of decks.
6. Any materials permitted by code where all exterior walls to which the *unenclosed accessory structure* is attached have a 1-hour fire-resistance rating, rated for exposure to fire from the exterior side, and have ignition-resistant materials complying with Section 503.2 on the exterior side.

505.7 Appendages and projections. *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. 1-hour *fire-resistance-rated construction.*
2. *Heavy timber construction.*
3. ~~1.~~ *Approved noncombustible* materials.
4. ~~2.~~ Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.
5. ~~3.~~ Ignition-resistant building materials in accordance with Section 503.2. **Exception:** Coated materials shall not be used as the walking surface of decks.
6. Any materials permitted by code where all exterior walls to which the *unenclosed accessory structure* is attached have a 1-hour fire-resistance rating, rated for exposure to fire from the exterior side, and have ignition-resistant materials complying with Section 503.2 on the exterior side.

Reason: The two options currently listed in the charging language of Sections 504.7 and 505.7 for appendages and projections are moved down into the existing list of other options. An additional option is added to the requirements for unenclosed accessory structures, such as decks, in Class 1 and Class 2 ignition-resistant construction. This additional option allows for unenclosed accessory structures to be constructed of any materials permitted by code where the exterior walls, to which the unenclosed accessory structures are attached, comply with enhanced fire protection requirements. These enhanced fire protection requirements for exterior walls require both a 1-hour fire-resistance rating and use of ignition-resistant materials on the exterior side. These requirements are more stringent than current exterior wall requirements in Class 1 ignition-resistant construction, which is permitted to be used where defensible space provisions of Section 603 are not met. This option for enhanced protection of the adjacent exterior walls will help prevent entry of fire into the building in the event of ignition of the unenclosed accessory structure, such as decks.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

$0 or less. There could be a cost decrease for some buildings.

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal provides one additional option for compliance (Item 6). This new option allows for more cost-effective deck construction in cases where exterior walls meet enhanced fire protection requirements. The other existing provisions and options currently allowed in 504.7 and 505.7 remain functionally unchanged.

WUIC42-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: It is premature to add this option if there is a standard under development. It would be good for that standard to be developed and testing to be done to see how the deck would affect the exterior wall. Also, the need to address the exterior glazing, vents, and door openings. (Vote: 12-1)

WUIC42-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.7, 505.7

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org); Jason Smart, American Wood Council (jsmart@awc.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

504.7 Appendages and projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, such as decks, shall be constructed of one of the following:

1. 1-hour *fire-resistance-rated construction*.
2. *Heavy timber construction*.
3. *Approved noncombustible* materials.
4. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.
5. Ignition-resistant building materials in accordance with Section 503.2. **Exception:** Coated materials shall not be used as the walking surface of decks.

6. Any materials permitted by code where ~~all~~ exterior walls ~~to which the *unenclosed accessory structure* is attached have a 1-hour fire-resistance rating, rated for exposure to fire from the exterior side, and have ignition-resistant materials complying with Section 503.2 on the exterior side.~~ within five feet (5') horizontally from the unenclosed accessory structure or projection comply with the following.

   6.1. Exterior walls are 1-hour fire-resistance rated, rated for exposure to fire from the exterior side;

   6.2. Exterior walls are constructed of ignition-resistant materials complying with Section 503.2 on the exterior side;

   6.3. Glazing in such exterior walls have a fire-protection rating of not less than 45 minutes, rated for exposure to fire from the exterior side;

   6.4. Doors in such exterior walls have a fire-protection rating of not less than 45 minutes, rated for exposure to fire from the exterior side;

   6.5. Vents in such exterior walls comply with the performance requirements of Section 504.10.1; and

   6.6. Eaves and soffits in such exterior walls comply with the requirements of Section 504.3.

505.7 Appendages and projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, such as decks, shall be constructed of one of the following:

1. 1-hour *fire-resistance-rated construction*.
2. *Heavy timber construction*.
3. *Approved noncombustible* materials.
4. Fire-retardant-treated wood identified for exterior use and meeting the requirements of Section 2303.2 of the International Building Code.
5. Ignition-resistant building materials in accordance with Section 503.2. **Exception:** Coated materials shall not be used as the walking surface of decks.
6. Any materials permitted by code where ~~all~~ exterior walls ~~to which the *unenclosed accessory structure* is attached have a 1-hour fire-resistance rating, rated for exposure to fire from the exterior side, and have ignition-resistant materials complying with Section 503.2 on the exterior side.~~ within five feet (5') horizontally from the unenclosed accessory structure or projection comply with the following.

   6.1. Exterior walls are 1-hour fire-resistance rated, rated for exposure to fire from the exterior side;

   6.2. Exterior walls are constructed of ignition-resistant materials complying with Section 503.2 on the exterior side;

   6.3. Glazing in such exterior walls have a fire-protection rating of not less than 45 minutes, rated for exposure to fire from the exterior side;

   6.4. Doors in such exterior walls have a fire-protection rating of not less than 45 minutes, rated for exposure to fire from the exterior side;

   6.5. Vents in such exterior walls comply with the performance requirements of Section 505.10.1; and

   6.6. Eaves and soffits in such exterior walls comply with the requirements of Section 504.3.

Reason: This proposal has been updated to incorporate feedback from the committee and opposing testimonies regarding the need for additional protection of the structure. New provisions have been included to enhance fire-protection measures of windows, doors, soffits and eaves in the adjacent wall(s), as well as an extension of these fire-protection measures for a specified distance beyond the edge of the deck. Note that the fire-protection rating of the windows and doors were increased to 45 minutes of protection, instead of 20 minutes that are required in other places in the IWUIC. This corresponds with fire-protection ratings required for windows and doors in one-hour fire-resistance-rated exterior wall assemblies in accordance with IBC Section 716. Also, the other options in Section 504.8 (and 505.8) for tempered glazing, multiple layered glazing panels, and glass block are not mentioned here because they are not tied to a performance

requirement. This is the same reason why the options for noncombustible doors or solid core wood doors found in 504.9 (and 505.9) have been removed.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

$0

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal provides one additional option for compliance with unenclosed accessory structures attached to buildings. Because this is just one option out of six, if a designer or builder chooses not to use this option, there would be no cost of construction change. However, if a designer or builder does choose to use this option, depending on the existing fire protection measures of the building, it could increase the cost of some buildings.

Comment (CAH2)# 113

WUIC44-24

IWUIC: 504.7.1, 505.7.1, 506.6 (New), 506.6.1 (New)

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Revise as follows:

504.7.1 Underfloor areas. ~~Where the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.~~
Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground with exterior wall construction in accordance with Section 504.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed in accordance with Section 504.7 and a minimum of 6 inches of metal flashing or noncombustible material applied vertically on the exterior of the vertically aligned structural elements such as columns and supporting walls at the ground.

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

1. Exterior wall construction in accordance with Section 505.5.

2. Noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm).

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed in accordance with Section 505.7 and a minimum of 6 inches of metal flashing or noncombustible material applied vertically on the exterior of the vertically aligned structural elements such as columns and supporting walls at the ground.

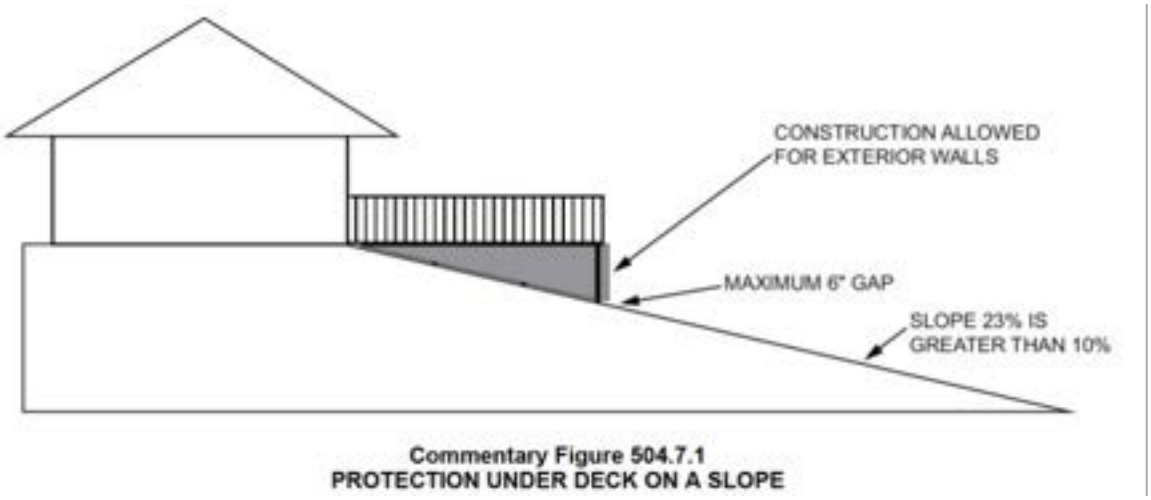
Add new text as follows:

506.6 Appendages and projections. The underfloor areas of unenclosed accessory structures and projections, such as decks, balconies, porches, and stairs attached to buildings with habitable spaces shall be constructed in accordance with Section 506.6.1

506.6.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground 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 of metal flashing or noncombustible material applied vertically on the exterior of columns and supporting walls at the ground.

Reason: Figure 1 clarifies the intention of sections 504.7.1 and 505.7.1. There are 4 concerns surrounding the current requirements of the IWUIC regarding the construction of an underfloor area of attached accessory structures.
First, there is no scientific reason to support the slope limitations provided in these sections. All structures, their attached accessory structures, detached accessory structures and their underfloor areas are exposed to at least one of the wildfire exposures. As it is well studied, wildfires can threaten buildings through three different exposures: embers, radiation heat, and direct flame contact. Excluding the underfloor area of attached accessory structures located on a surface with a slope less than 10 percent will result in excluding many balconies, decks, stairs, and other attached accessory structures constructed on flat surfaces. The code requirements should not

differentiate between underfloor areas of building and attached structures. This is also against the requirements provided in the California Building Code (Chapter 7A, Section 707.9A).



Commentary Figure 504.7.1
PROTECTION UNDER DECK ON A SLOPE

Figure 1. 6-in gap at the ground level (IWUIC Commentary).

Second, technical concerns around having a 6-in opening at the base of walls. Currently, the code requires the underfloor areas of attached accessory structures to be fully enclosed to within 6 inches (152 mm) of the ground (Figure 1). The 6-in opening seems to be required for water irrigation purposes. However, this requirement does not align well with provided construction methods for attached accessory structures.

According to sections 504.7 and 505.7, appendages and projections shall be constructed with one of the following alternatives:

1. 1-hour fire-resistant construction.
2. Heavy timber construction.
3. Approved noncombustible materials.
4. Fire-retardant-treated wood.
5. Ignition-resistant building materials in accordance with section 503.2.

In a 1-hour fire-resistant floor assembly, the fire shall not pass the floor assembly for at least 1 hour during ASTM E119 or UL 263 fire test. Consequently, water intrusion through the floor system is not possible.

In heavy timber construction, based on the definition (Figure 2) from IBC, “the exterior walls are of noncombustible materials” with some exceptions.

602.4.4 Type IV-HT. Type IV-HT (Heavy Timber) construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid wood, laminated heavy timber or structural composite lumber (SCL), without concealed spaces or with concealed spaces complying with Section 602.4.4.3. The minimum dimensions for permitted materials including solid timber, glued-laminated timber, SCL and cross-laminated timber (CLT) and the details of Type IV construction shall comply with the provisions of this section and Section 2304.11. Exterior walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Interior walls and partitions not less than 1- hour fire-resistance rated or heavy timber conforming with Section 2304.11.2.2 shall be permitted.

Figure 2. IBC requirements for Heavy Timber (HT) construction.

Figure 3 provides examples of attached accessory structure constructed with noncombustible materials. It is evident that building a noncombustible attached accessory structure with maximum 6-in gap at the base is unnecessary and impractical in many cases. IWUIC provides an exception for underfloor areas of buildings and detached accessory structures while missing a similar requirement for attached accessory structures. In many instances such as examples provided in Figure 3, attached accessory structures are required to have unenclosed underfloor areas and having an exception is unavoidable.

Figure 3. Unenclosed and enclosed attached accessory structure nonconforming with current requirements.

In addition, there is a safety concern about having a 6-in gap at the base during a wildfire. Combustible debris and embers can both collect in corners and around the building where exterior walls intersect with horizontal surfaces (Figure 4). IBHS research shows that protecting these areas with noncombustible materials can protect the building from ignitions caused by embers. Leaving a gap at the base of exterior walls of attached accessory structures will increase the chance of combustible debris and ember accumulation under the deck area.

Figure 4. Ember accumulation around a building, IBHS Research Center.

Finally, the IWUIC provides identical requirements for construction of underfloor areas of attached accessory structures in IR1 and IR2. On the other hand, the IWUIC does not address this known vulnerability in IR3. All buildings located in wildfire prone areas need to be always protected against ember exposure.

This code change proposal intends to address these concerns by revising the requirements in sections 504.7.1 and 505.7.1 and adding a new section forIR3.

Section 504.7.1 revised to:

- Eliminate the slope limitation.
- Eliminate the 6-in opening at the base.

- Add exception for unenclosed underfloor areas.
- Add a 6-in noncombustible flashing requirement to columns and walls of unenclosed underfloor areas.

Section 505.7.1 revised to:

- Eliminate the slope limitation.
- Eliminate the 6-in gap at the base.
- Provide additional alternative (1/8-in noncombustible mesh) for protection of underfloor areas to make it less restrictive than IR Class 1.
- Add exception for unenclosed underfloor areas.
- Add a 6-in noncombustible flashing requirement to columns and walls of unenclosed underfloor areas.

New section added to IR Class 3 to:

- Add a 1/8-in noncombustible screen mesh protection for underfloor areas to make it ember-resistant with less restrictive requirements than IR Class 1 and 2.
- Add exception for unenclosed underfloor areas.
- Add a 6-in noncombustible flashing requirement to columns and walls of unenclosed underfloor areas to make unenclosed underfloor areas ember-resistant.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This code change proposal will increase the construction cost where it expands the scope of these sections through eliminating the limitation of the ground slope. However, the code change will reduce construction costs by proposing exceptions for unenclosed underfloor areas. It will also increase the construction cost in IR Class 3 construction where the code change will mandate additional requirements for protecting underfloor areas with 1/8-in noncombustible mesh screen or 6-in metal flashing.

According to research performed by IBHS and Headwaters Economics in 2022 [1], constructing an unenclosed underfloor area with a wall constructed with noncombustible cement board siding instead of a wall with wooden composite siding will increase the construction cost $1.38 per square foot.

Estimated Immediate Cost Impact Justification (methodology and variables):

Bibliography

[1] Headwaters Economics and Insurance Institute for Business & Home Safety, 2022, Construction costs for a wildfire-resistant home, California Edition. https://headwaterseconomics.org/wp-content/uploads/2022_HE_IBHS_WildfireConstruction.pdf

WUIC44-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **As Submitted**

Committee Reason: The committee stated that the reasons for the approval of the proposals were: It is expanding options versus being more restrictive and because of that, it provides more options for the design. Additionally, it was noted that it is supported with the data provided. (Vote: 8-4)

WUIC44-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.7.1, 505.7.1, 506.6.1

Proponents: Gary J Ehrlich, NAHB, NAHB (gehrlich@nahb.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.7.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground with materials permitted for exterior wall construction in accordance with Section 504.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed in accordance with Section 504.7 and a minimum of 6 inches of ~~metal flashing or~~ noncombustible material or metal flashing extending ~~applied~~ vertically from grade is provided on the exterior of ~~the vertically aligned structural elements such as~~ supporting columns and ~~supporting~~ walls ~~at the ground~~.

505.7.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground with one of the following methods:

1. Materials permitted for exterior ~~Exterior~~ wall construction in accordance with Section 505.5.

2. Noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm).

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed in accordance with Section 505.7 and a minimum of 6 inches of ~~metal flashing or~~ noncombustible material or metal flashing extending ~~applied~~ vertically from grade is provided on the exterior of ~~the vertically aligned structural elements such as~~ supporting columns and ~~supporting~~ walls ~~at the ground~~.

506.6.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground 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 of ~~metal flashing or~~ noncombustible material or metal flashing extending ~~applied~~ vertically from grade is provided on the exterior of supporting columns and ~~supporting~~ walls ~~at the ground~~.

Reason: The existing language of Sections 504.7.1 and 505.7.1, and the revised language in Section 504.7.1 and Item #1 under 505.7.1, require the underfloor space to be enclosed with exterior wall construction complying with 504.5 or 505.5, as applicable. The use of the term “exterior wall” can be taken literally to mean the underfloor space shall be enclosed with exterior wall assemblies that not only comply with the IWUIC’s requirements for using materials or methods of construction that provide ignition and fire resistance, but also need to meet structural requirements for out-of-plane wind loads and lateral wind and seismic resistance through shear walls or wall bracing, weather protection requirements (i.e., water-resistive barriers and flashing), and energy code requirements for insulation and air barriers. The cost and design implications of providing a complete enclosure for these underfloor areas that essentially makes them occupiable or habitable spaces is considerable.Note also if the underfloor areas affected by this proposal are completely enclosed and of a size and height that could be converted to habitable space, some jurisdictions may count the area as part of the total square footage for property tax assessment purposes, thus increasing the homeowner’s tax burden (and monthly cost to a tenant if the property is rented) even more than would occur simply due to the higher cost of construction to comply with IWUIC requirements.This comment follows the lead of the current IWUIC commentary for the existing requirements, which refer to enclosing the underfloor area with “materials allowed for exterior wall construction.” This is very different than calling the resulting enclosure an “exterior wall” and would not necessarily lead a designer, builder, or code official to apply all of the requirements consistent with an exterior wall.This comment also revises the requirements for 6” of noncombustible material or metal flashing to align with the language used for similar requirements in WUIC39-24. The key difference is removing the language specifying the material be “applied vertically on the exterior”, which could be interpreted to require 6” of metal flashing or other noncombustible material be applied over a column or wall that is already constructed of noncombustible material.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

This comment will decrease the cost of construction relative to the original proposal

Estimated Immediate Cost Impact Justification (methodology and variables):

This comment will decrease the cost of construction relative to the original proposal as it will provide for enclosing spaces below decks, stairs, porches and other accessory structures or projecting elements in a manner that will protect against ember intrusion and radiant heat but not create an enclosure that building officials may also require incorporate lateral structural resistance, protection against moisture intrusion and vapor drive, and even insulation and air barriers.

Comment (CAH2)# 301

Comment 2:

IWUIC: 504.7.1, 505.7.1, 506.6.1

Proponents: Gary J Ehrlich, NAHB, NAHB (gehrlich@nahb.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.7.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground with exterior wall construction in accordance with Section 504.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed in accordance with Section 504.7 and vertically aligned structural elements at grade such as columns and supporting walls are protected with a minimum of 6 inches of metal flashing or noncombustible material applied vertically on the exterior at grade ~~of the vertically aligned structural elements such as columns and supporting walls at the ground~~.

505.7.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground with one of the following methods:

1. Exterior wall construction in accordance with Section 505.5.

2. Noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm).

Exception: Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed in accordance with Section 505.7 and vertically aligned structural elements at grade such as columns and supporting walls are protected with a minimum of 6 inches of metal flashing or noncombustible material applied vertically on the exterior at grade. ~~of the vertically aligned structural elements such as columns and supporting walls at the ground.~~

506.6.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm).

Exception: Complete enclosure shall not be required where vertically aligned exposed structural elements such as columns and supporting walls are protected with a minimum of 6 inches of metal flashing or noncombustible material applied vertically on the exterior at grade. ~~of columns and supporting walls at the ground.~~

Reason: The purpose of this committee comment is to address an issue with the construction of balconies created by WUIC43 including

them in the list of elements considered to be accessory structures or projections with underfloor areas that need to be regulated by 504.7, 505.6 and 506.6 and also by this proposal. The exception as currently written can be interpreted to apply only if an accessory structure or projection is supported on exposed columns or walls. Otherwise, enclosure to grade is required.

However, balconies are cantilevered from the structure of the building they are associated with and do not have exposed supporting columns or walls outside the exterior walls of the building. Thus, one could interpret a balcony two or more stories above grade would have to be enclosed all the way down to grade. Besides the significant cost implications of doing so, this doesn't make sense even from a wildfire mitigation perspective. Being a structurally cantilevered element, the extent that a balcony can project from the face of a building is self-limiting, thus the ability of heat or embers to be trapped below a balcony is limited.

This comment revises the language addressing the need for exposed supporting columns and walls at grade to consist of noncombustible materials for the first 6 inches above grade or be protected with noncombustible flashing for the first six inches to clarify that part of the exception only applies if such elements exist. Otherwise, a balcony would still need to be constructed of fire-rated construction, heavy timber, noncombustible materials, fire-retardant-treated wood or other ignition-resistant materials.

Cost Impact: Increase

Estimated Immediate Cost Impact:

The original proposal as modified by this committee comment will increase the cost of construction.

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal as modified by this committee comment will still increase the cost of construction for unenclosed accessory structures connected to buildings with habitable space and projections that are supported by exposed columns or walls at grade and would either need to be enclosed by exterior walls complying with IWUIC requirements or have the bottom 6" of exposed columns and walls be noncombustible material or protected with 6 inches of noncombustible flashing. But with the comment, balconies on a multifamily building (or other building) would not need to be enclosed all the way down to grade, which could be many floors worth of enclosure.

Comment (CAH2)# 554

Comment 3:

IWUIC: 504.7.1, 504.7.1.1 (New), 504.7.1.2 (New), 505.7.1, 506.6, 506.6.1

Proponents: Jonathan Humble, Jonathan Humble, FAIA, LLC, National Multi-Family Housing Council (festeel@att.net) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

504.7.1 Underfloor areas. *Unenclosed accessory structures* and projections attached to buildings with habitable spaces shall ~~have underfloor areas enclosed to the ground with exterior wall construction in accordance with Section 504.5.~~ be constructed in accordance with 504.7.1.1 or 504.7.1.2.

Exception: ~~Complete enclosure shall not be required where the underside of exposed floors and~~ Walls shall not be required for *accessory structures* and projections whose exposed structural columns, beams and supporting walls are constructed of fire-retardant-treated wood or ignition resistant building materials ~~in accordance with Section 504.7 and~~ that include a minimum of 6 inches (152 mm) of metal flashing or noncombustible material applied vertically on the exterior of the vertically aligned structural elements such as columns and supporting walls at the ground.

Add new text as follows:

504.7.1.1 Accessory structures and projections near grade . *Unenclosed accessory structures* and projections attached to buildings

with habitable spaces, that are less than 80 inches (2,032 mm) measured from the deck, floor, or landing framing underside to any point to the grade below, including accessory stairs or ramps and intermediate landings, shall be constructed in accordance with one or more of the following:

1. *Accessory structures* or projections constructed of approved *noncombustible* building materials in accordance with Section 503.2.1, with noncombustible ground cover installed at grade below the *accessory structure* or projection.
2. From the deck, floor or landing the accessory structure or projection shall be enclosed with walls constructed in accordance with Section 504.5 down to grade.

504.7.1.2 Accessory structures and projections above other accessory structures and projections. *Unenclosed* a*ccessory structures* and projections attached to buildings with habitable spaces, that are 80 inches (2,032 mm) or greater measured from the deck, floor, or landing underside framing to another deck, floor, or landing surface below or to the grade below, shall be constructed in accordance with one or more of the following:

1. Constructed of *noncombustible* building materials in accordance with Section 503.2.1,
2. Constructed of *ignition-resistant building material*s in accordance with Section 503.2.4.

505.7.1 Underfloor areas. *Unenclosed accessory structures* and projections attached to buildings with habitable spaces shall ~~have underfloor areas enclosed to the ground with one of the following methods:~~ be constructed in accordance with Section 504.7.1.

~~1. Exterior wall constructed in accordance with Section 505.5.~~
~~2. Constructed of ignition-resistant building material in accordance with 503.2.4.~~

Exception: ~~Complete enclosure shall not be required where the underside of exposed floors and~~ Walls shall not be required for accessory structures or projections whose exposed structural columns, beams and supporting walls are constructed of fire-retardant-treated wood or ignition resistant building materials ~~in accordance with Section 505.7 and~~ that include a minimum of 6 inches (152 mm) of metal flashing or noncombustible material applied vertically on the exterior of the vertically aligned structural elements such as columns and supporting walls at the ground.

506.6 Appendages and projections. The underfloor areas of *unenclosed accessory structures* and projections, such as decks, balconies, porches, and stairs attached to buildings with habitable spaces shall be constructed in accordance with Section 506.6.1 or 504.7.1.

506.6.1 Underfloor areas. Unenclosed accessory structures and projections attached to buildings with habitable spaces shall have underfloor areas enclosed to the ground 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 of metal flashing or noncombustible material applied vertically on the exterior of columns and supporting walls at the ground.

Reason: The original proposal WUI44-24 changed the requirements from a fire mitigation protection requirement (Radiant heat and fire) to a requirement designed to mitigate the impact of burning embers to unenclosed accessory structures and projections by establishing requirements for either noncombustible construction or the creation defensible spaces.

Unfortunately, the proposal also created unintended consequences. The original proposal requires that all balconies or decks above other balconies or decks be enclosed. Example, a balcony or deck on the second or higher story would be required to have its underside enclosed down to the deck or balcony below because the proposal does not provide guidance as to how to address this scenario. Another Example, a balcony or deck on a second story with no balcony or deck below would be required to enclose the underside down two-stories to grade because of a lack of direction in the proposal. The National Multi-Family Housing Council does not believe this to be the intent by the proponent nor the bibliographical material provided by the proponent.

Further, the requirement for enclosure of the underfloor area of a accessory structure or projection is based on the proponents reason statement which

discusses debris accumulation as the culprit. However, the example photographs in Figure 3 of the proponents reason statement, and the bibliographical materials, both illustrate clean underfloor areas with outdoor furniture. This raises the question if the issue is debris or deck furniture?

Finally, the exceptions in 504.7.1 and 505.7.1 appear to be redundant to their charging paragraph. Both Sections 504.5 and 505.5 that are referenced contain a list of acceptable building materials, however it is not clear why the application of metal flashing at the base of columns of noncombustible or even ignition resistant building material will provide any better fire resistance or improve the amount of time for embers to impact those building materials.

The modifications shown in this proposal attempt to compromise with the proponents intended scope, as follows:

1. The modifications are designed to handle two scenarios each; the first where a balcony or deck is near grade, and the second where a balcony or deck is above another deck or another story, or, above grade by more than 80 inches,
2. addressing decks and balconies above the first-floor level to have differing requirements to mitigate burning embers from initiating a fire to the habitable portion of the building.
3. Differentiating requirements for noncombustible construction versus other constructions requirements for wall enclosures,
4. Inclusion of a minimum headroom requirement of 80 inches (Value taken from the International Building Code Chapter 11) for any point under the unenclosed accessory structure or projection to further demarcate the change from a structure or projection near grade versus one at a greater height or over another structure or projection,
5. The exceptions in 504.7.1 and 505.7.1 were revised to apply to only those materials that could combust and not noncombustible building materials, and
6. Revising Section 506.6 by adding the optional use of Section 504.7.1,

These changes will allow the ember protection requirements to be maintained and at the same time allow building owners to design buildings with balconies or decks on all stories.

Bibliography: No bibliographical items.

Cost Impact: Increase

Estimated Immediate Cost Impact:

The modification proposed will increase the cost impact the same as the original proposal WUIC44-24. The additional measures needed to provide a defendable space under decks, balconies, landings that the like will require additional materials and labor to provide same.

Estimated Immediate Cost Impact Justification (methodology and variables):

This proposed modification will increase the construction cost as the requirements for requiring ember mitigation require building materials that are noncombustible or ignition-resistant which are of greater cost that the materials currently allowed in the 2024 IWUIC. Cost will vary on which measure is designed into the building.

Comment (CAH2)# 496

WUIC45-24

IWUIC: 504.9, 504.9.1 (New), 505.9, 505.9.1 (New), 506.9 (New), 506.9.1 (New)

Proposed Change as Submitted

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net)

2024 International Wildland Urban Interface Code

Revise as follows:

504.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid-core wood not less than $1\frac{3}{4}$ inches thick (44 mm) and protected with a minimum 6-inch noncombustible material, such as a kick plate, applied at the base on the exterior of the door, or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8. **~~Exception~~ Exceptions:** ~~Vehicle access doors.~~

1. Vehicle access doors.
2. The 6 inches of noncombustible material at the base is not required for solid-core wood doors not less than $1\frac{3}{4}$ inches thick (44 mm) protected by an approved noncombustible door such as a storm door.

Add new text as follows:

504.9.1 Exterior underfloor access doors. Exterior underfloor access doors shall be constructed with noncombustible material or a minimum of 6-in noncombustible material that extends vertically from the base.

Revise as follows:

505.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid core wood not less than $1\frac{3}{4}$ inches thick (45 mm) and protected with a minimum 6-inch noncombustible material such as a kick plate at the base on the exterior of door , or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 505.8. **~~Exception~~ Exceptions:** ~~Vehicle access doors.~~

1. Vehicle access doors.
2. The 6 inches of noncombustible material at the base is not required for solid-core wood door not less than $1\frac{3}{4}$ inches thick (44 mm) protected by an approved noncombustible door such as a storm door.

Add new text as follows:

505.9.1 Exterior underfloor access doors. Exterior underfloor access doors shall be constructed with noncombustible material or a minimum 6-in noncombustible material that extends vertically at the base.

506.9 Exterior doors. Exterior doors shall be protected with a minimum 6-inch noncombustible material at the base on the exterior of the door. **Exceptions:**

1. Vehicle access doors.
2. Exterior doors protected by an approved noncombustible door such as a storm door.

506.9.1 Exterior underfloor access doors. Exterior underfloor access doors shall be constructed with noncombustible material or a minimum 6-in noncombustible material that extends vertically at the base.

Reason: Like other parts of the building envelope, exterior doors can be exposed to flames, radiant heat, and embers. NIST's Waldo Canyon Fire (2012) post-investigation in El Paso County, Colorado, reports doors as a frequent damaged component of the building [1]. Maintaining a proper defensible space around the building reduces the potential thermal insults from flames. However, embers can still accumulate at the base of a door and potentially penetrate through the door jamb. IBHS's post-Marshall Fire (2021) investigation in Boulder County, Colorado, showed damage to exterior doors due to ember accumulation at the base, as can be seen in Figure 1a. Figure 1b demonstrates ignition of the door jamb due to ember penetration during the Victorian Bushfire (2009) in Australia [2].

(a) (b)

Figure 1. ignition from accumulation of embers and debris at the base of the door.

This code change proposal intends to address this vulnerability by providing requirements for all buildings located in wildfire prone areas (IR1,2 and 3) to protect the exterior doors against embers.

Requiring a 6-in noncombustible vertical protection by a kickplate at the base of exterior doors or a storm door will reduce this vulnerability (Figure 2).

(a) (b)

Figure 2. Protection for exterior doors (a) storm door, (b) kickplate.

The 6-in noncombustible vertical clearance at the base of the door can protect the exterior door assembly against embers. As a part of this effort, a new section was added to the IR1, 2, and 3 exterior doors to protect exterior underfloor access doors (Figure 3) against embers.

(a) (b)

Figure 3. Exterior underfloor access doors (a) unprotected vs. (b) protected against embers.

Bibliography: [1] Maranghides, A., McNamara, D., Vihnanek, R., Restaino, J., & Leland, C. (2015). A Case Study of a Community Affected by the Waldo Fire Event Timeline and Defensive Actions (NIST Technical Note 1910). National Institute of Standards and Technology. https://doi.org/10.6028/NIST.TN.1910
[2] Leonard, J. (2009). Report to the 2009 Victorian bushfires Royal Commission. Building performance in bushfires (CSIRO Sustainable Ecosystems, Issue. CSIRO Sustainable Ecosystems.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

This code change will slightly increase the construction cost by requiring a 6-in noncombustible protection at the base for exterior doors and exterior underfloor access doors.

Estimated Immediate Cost Impact Justification (methodology and variables):

A web search of several retailers carrying kickplate, storm doors and a metal underfloor access door revealed that a kickplate costs approximately $33, a storm door costs approximately $400 and 12-in by 12-in metal underfloor access door costs around $40. Additional labor costs are estimated to be negligible.

WUIC45-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The desire to have the revisions in two separate proposals. The underfloor space and noncombustible door there add value to the requirements. Concern about putting something in the code that in real life scenarios may not do anything. It includes all types of doors including glass doors which is not appropriate. The committee would like to see some more evidence of the doors and the fire consuming the structure. (Vote: 12-1)

WUIC45-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.9, 504.9.1, 505.9, 505.9.1, 506.9, 506.9.1

Proponents: Milad Shabanian, Insurance Institute for Business & Home Safety, Insurance Institute for Business & Home Safety (mshabanian@ibhs.org); T. Eric Stafford, Insurance Institute for Business and Home Safety (testafford@charter.net) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid-core wood not less than $1\frac{3}{4}$ inches thick (44 mm) ~~and protected with a minimum 6-inch noncombustible material, such as a kick plate, applied at the base on the exterior of the door~~ or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 504.8. **Exception ~~Exceptions~~:**

1. ~~1.~~ Vehicle access doors.
2. ~~2. The 6 inches of noncombustible material at the base is not required for solid-core wood doors not less than $1\frac{3}{4}$ inches thick (44 mm) protected by an approved noncombustible door such as a storm door.~~

504.9.1 Exterior underfloor access doors. Exterior underfloor access doors shall be constructed with noncombustible material or a minimum of 6-in noncombustible material that extends vertically from the ~~base~~ ground.

Revise as follows:

505.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid core wood not less than $1\frac{3}{4}$ inches thick (45 mm) ~~and protected with a minimum 6-inch noncombustible material such as a kick plate at the base on the exterior of door~~ or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 505.8. **Exception ~~Exceptions~~:**

1. ~~1.~~ Vehicle access doors.
2. ~~2. The 6 inches of noncombustible material at the base is not required for solid-core wood door not less than $1\frac{3}{4}$ inches thick (44 mm) protected by an approved noncombustible door such as a storm door.~~

505.9.1 Exterior underfloor access doors. Exterior underfloor access doors shall be constructed with noncombustible material or a minimum 6-in noncombustible material that extends vertically at the base.

Delete without substitution:

~~**506.9 Exterior doors.** Exterior doors shall be protected with a minimum 6-inch noncombustible material at the base on the exterior of the door. **Exceptions:**~~

1. ~~Vehicle access doors.~~
2. ~~Exterior doors protected by an approved noncombustible door such as a storm door.~~

Revise as follows:

506.9.~~1~~ Exterior underfloor access doors. Exterior underfloor access doors shall be constructed with noncombustible material or a

minimum 6-in noncombustible material that extends vertically at the base.

Reason: This comment addresses feedback provided by the committee. The committee found merit in the proposed changes related to exterior underfloor access doors. However, they weren't convinced that the new requirements proposed for exterior doors were needed and requested more evidence indicating a problem. The committee recommended that the issues raised in this proposal should be submitted in two separate proposals. Based on the committee's reason and recommendations to the proponents, this comment simply removes the requirements proposed for exterior doors and maintains the parts related to underfloor access doors.

Cost Impact: Increase

Estimated Immediate Cost Impact:

A web search of several retailers carrying metal underfloor access door revealed that a 12-in by 12-in metal underfloor access door costs around $40. Additional labor costs are estimated to be negligible.

Estimated Immediate Cost Impact Justification (methodology and variables):

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Comment (CAH2)# 56

WUIC46-24

IWUIC: 504.9.1 (New), ASTM Chapter 07, UL Chapter 07

Proposed Change as Submitted

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org)

2024 International Wildland Urban Interface Code

Add new text as follows:

504.9.1 Garage door perimeter gap. Exterior garage doors for vehicles shall resist the intrusion of embers by protecting the gaps between each door and the opening at the bottom, sides and top by all of the following:

1. Bottom opening shall provide a maximum gap of 1/8 inch (3.2 mm) between the surface and the door opening seal.
2. Sides and top by one or more of he following:

   2.1 Provide a maximum gap of 1/8 inch (3.2 mm) between the door and the door opening.

   2.2 Cover or block the gap with weather-stripping products constructed of materials which comply with both of the following:

      2.2.1 The tensile strength of he material shall be tested in accordance with ASTM D638 before and after light exposure in accordance with ASTM G155 for a period of 2000 hours, and the maximum allowable difference in tensile strength values between exposed and non-exposed samples shall not exceed 10 percent.

      2.2.2 The material shall be tested in accordance with UL 94 and have a flammability rating of V-2 or better.

   2.3 Cover or block the gap with metal flashing.

Revise as follows:

ASTM

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

D638-22	Standard Test Method for Tensile Properties of Plastics.
G155—21	Practice for Operating Xenon Arc Light Apparatus For Exposure of Nonmetallic Materials

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

94-2023	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, 7th edition

Reason: One of the issues with wildland fires is the spread of flaming or hot embers into structures. This proposal is intended to address protection of vehicle door of a garage to reduce this exposure and eliminate a route of ember entry by addressing the gap created between the garage door and the garage door opening.

Section 504.9.1 requires a battery backup for motorized garage door openers. Often in a wildland fire, utility power is shut down, or damaged, to an area or region. When the utility power is no longer available, and the residents need to evacuate, the garage door can still be opened to allow vehicles to exit and then closed to protect the opening into the garage.

Section 504.9.2 addresses the gap, or clearance, provided around the garage door allowing for door movement and operation. This gap needs to be evaluated to inhibit the passage of flaming embers. There are four methods of protection offered in this section: 1) design the door so there is a maximum ⅛" gap on all four sides of the door; 2) provide weatherstripping to cover or fill the gap—weatherstripping must be designed to stay in place during the impact of the fire so criteria is provided (Items 2.1 and 2.2) to address the strength and

flammability of the material; and 3) install metal flashing to cover the gap. Any one of the methods can be utilized, or a combination of these methods will suffice. For example, the door may have less than a 1/8" gap along the header (Item 3) and be provided with weatherstripping on the bottom and sides (Item 2).

As part of the requirements for protecting the gap, new test standards are included to ensure that where weather-stripping is chosen as the solution, the weather-stripping material is reliable and dependable for the purpose.

FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

The approximate cost of compliance to add an approved protection material around the edges of a vehicle garage door is $50. As this is only one of the compliance options, the added cost will be applicable in an estimated 1/3 to 1/2 of the cases.

Estimated Immediate Cost Impact Justification (methodology and variables):

The materials needed for compliance with this proposal are readily available in the retail and wholesale building supply chain. Installation labor is minimal or can be DIY.

WUIC46-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee stated that the reason for the approval of the proposal was that the testimony all supported the fact that gaps in garage door openings is a problem that needs fixing, and the nationally recognized standards can be used in the new requirements to protect these gaps. (Vote: 12-1)

WUIC46-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.9.1, UL Chapter 07

Proponents: Jonathan Roberts, UL Solutions, UL Solutions (jonathan.roberts@ul.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.9.1 Garage door perimeter gap. Exterior garage doors for vehicles shall resist the intrusion of embers by protecting the gaps between each door and the opening at the bottom, sides and top by all of the following:

1. Bottom opening shall provide a maximum gap of 1/8 inch (3.2 mm) between the surface and the door opening seal.
2. Sides and top by one or more of he following:

   2.1 Provide a maximum gap of 1/8 inch (3.2 mm) between the door and the door opening.

   2.2 Cover or block the gap with weather-stripping products constructed of materials which comply with ~~both of~~ the following:

      2.2.1 The tensile strength of he material shall be tested in accordance with ASTM D638 before and after light exposure in accordance with ASTM G155 for a period of 2000 hours, and the maximum allowable difference in tensile strength values between exposed and non-exposed samples shall not exceed 10 percent.

      ~~2.2.2 The material shall be tested in accordance with UL 94 and have a flammability rating of V-2 or better.~~

   2.3 Cover or block the gap with metal flashing.

Delete without substitution:

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

~~94-2023~~ ~~Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, 7th edition~~

Reason: UL 94 (Tests for Flammability of Plastic Materials for Parts in Devices and Appliances) is a small scale test intended to be used solely to measure and describe the flammability properties of materials, used in devices and appliances, in response to a small open flame or radiant heat source under controlled laboratory conditions. The scope specifically states the test requirements do not cover polymeric materials when used for building construction.

This test standard is not the correct test for evaluating garage-door edge-gap materials used to protect against intrusion of embers.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposed language does not add cost, one could even argue that it removes a test and therefore it reduces the cost of construction.

Comment (CAH2)# 238

WUIC48-24

IWUIC: 504.10, 505.10

Proposed Change as Submitted

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org)

2024 International Wildland Urban Interface Code

Revise as follows:

504.10 Vents. Where provided, ~~ventilation~~ openings ~~for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening~~ intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

505.10 Vents. Where provided, ~~ventilation~~ openings ~~for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening~~ intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 505.10.1 or Section 505.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

Reason: The existing charging language of sections 504.10 and 505.10 contains a lengthy and potentially incomplete list which includes a mixture of constructions (e.g., enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces) and ventilation opening locations (e.g., gable ends, ridge ends, under eaves and cornices, foundations). However, a careful review of the current language reveals the intent is for the provisions to apply to any "opening intended to permit ventilation." This proposal simplifies the charging language by removing the list and relying on the heart of the provision, i.e., all ventilation openings are to be protected.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal makes no technical change to existing provisions. Therefore, there should be no impact on construction cost. See also the proponent's reason statement.

WUIC48-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The approval of the proposal was based on the proponent's reason statement. (Vote: 11-2)

WUIC48-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.10, 505.10, 506.5

Proponents: Gary J Ehrlich, NAHB, NAHB (gehrlich@nahb.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.10 Ventilation Openings~~Vents~~. Where provided, openings intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings. **Exceptions:**

1. Clothes dryer and kitchen exhaust openings shall comply with the duct termination requirements of the *International Mechanical Code* or *International Residential Code*, as applicable.
2. Duct and air transfer openings in exterior walls provided for fully-ducted HVAC systems shall comply with the opening protection requirements of the *International Mechanical Code* or *International Residential Code*, as applicable.

505.10 Ventilation Openings~~Vents~~. Where provided, openings intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 505.10.1 or Section 505.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings. **Exceptions:**

1. Clothes dryer and kitchen exhaust openings shall comply with the duct termination requirements of the *International Mechanical Code* or *International Residential Code*, as applicable.
2. Duct and air transfer openings in exterior walls provided for fully-ducted HVAC systems shall comply with the opening protection requirements of the *International Mechanical Code* or *International Residential Code*, as applicable.

506.5 Ventilation openings~~Vents~~. Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure. **Exceptions:**

1. Clothes dryer and kitchen exhaust openings shall comply with the duct termination requirements of the *International Mechanical Code* or *International Residential Code*, as applicable.
2. Duct and air transfer openings in exterior walls provided for fully ducted HVAC systems shall comply with the opening protection requirements of the *International Mechanical Code* or *International Residential Code*, as applicable.

Reason: The purpose of this committee comment is to resolve a conflict that proposal WUIC15-21 created last cycle and WUIC48-24 drew more attention to.

From the 2006 through the 2018 edition of the IWUIC, Sections 504.10 and 505.10 allowed ventilation openings to be “designed and approved to prevent flame or ember penetration into the structure” as an alternative to the noncombustible corrosion-resistant mesh. This provided a compliance path for exhaust and intake vents not specific to ventilated attic and rafter assemblies or crawlspace foundations. While the concept of protecting all openings in a wildfire-prone area makes sense, the removal of the performance language in deference to either providing noncombustible corrosion-resistant mesh with openings not exceeding 1/8” or listed vent products tested to ASTM E2886 creates conflicts with openings for dryer and kitchen exhaust vents as well as openings for intake and exhaust vents serving HVAC equipment. Despite the fact the IWUIC commentary on these sections focuses on attic and crawlspace vents. these other

types of openings can easily be interpreted as being “intended to permit ventilation” and requiring them to be protected only with 1/8” mesh or listed vent products creates conflicts with existing provisions in the IBC, IRC, and IMC addressing such openings. This comment proposes two exceptions to resolve the conflict.

Exception #1 points to the provisions of the IMC and IRC for clothes dryer and kitchen exhaust openings. IMC Section 505.4 and IRC Section M1502.3 for dryer exhaust duct terminations, and IMC Section 505.3 and IRC Section M1503.3 for kitchen exhaust discharge, require a backdraft damper at the exhaust duct termination or exhaust discharge. Further, the IMC and IRC specifically prohibit the installation of screens at dryer exhaust duct terminations. To prevent an internal conflict between the I-Codes, an exception to address these openings is required. Note these dampers are typically aluminum or steel blades or frames, are designed to close to prevent inward (reverse) airflow and can be gravity operated (where air pressure or wind velocity could close the damper) or motorized. It is clear these dampers will by default protect against ember intrusion.

Exception #2 points to the applicable provisions for protection of other duct and air transfer openings in the IBC and IRC. IBC Section 717 provides requirements for ducts and air transfer openings required to be protected (e.g., when such openings are in fire-rated exterior walls). Further, IRC Section R303.6, IMC Section 401.5 and IMC Section 501.3.2 require air exhaust and intake openings be protected with corrosion-resistant screens, louvers or grills with ¼” min and ½” max opening size, and otherwise comply with exterior wall opening protection requirements in the IBC. These openings will generally lead to metallic ducts that would not present an ignition risk should embers penetrate the screens, louvers or grills.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The exceptions proposed in the committee comment point to existing code provisions that address clothes dryer and kitchen exhaust vents and HVAC intake and exhaust vents. At the very least these pointers simply clarify what is already required for these sorts of ventilation openings, thus there is no cost impact. The pointers could reduce cost relative to the original proposal by eliminating potential conflicts or heading off someone requiring a listed, fire-tested vent where it is not necessary or where such a product may not even exist.

Comment (CAH2)# 304

Comment 2:

IWUIC: 504.10, 505.10

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.10 Ventilation openings~~Vents~~. Where provided, openings intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

505.10 Ventilation openings~~Vents~~. Where provided, openings intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 505.10.1 or Section 505.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

Reason: WUIC48-24 was supported as submitted during CAH #1. However, the Committee suggested that a change in section titles

would improve the proposal. This comment is in direct response to that suggestion. Specifically, it recommends changing the titles of Sections 504.10 and 505.10 from "Vents" to "Ventilation openings," which aligns the section titles with the contents of the sections.

A separate comment to WUIC51-24 offers the same change for Section 506.5 to address the titles of all three of the relevant sections.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The comment alters section titles only, which will have no effect on cost of construction.

Comment (CAH2)# 154

Comment 3:

IWUIC: 504.10, 505.10

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.10 Vents. Where provided, openings intended to permit ventilation of enclosed attics or enclosed rafter spaces in accordance with *International Building Code* Section 1202.2 or of under-floor areas in accordance with *International Building Code* Section 1202.4, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

505.10 Vents. Where provided, openings intended to permit ventilation of enclosed attics or enclosed rafter spaces in accordance with *International Building Code* Section 1202.2 or of under-floor areas in accordance with *International Building Code* Section 1202.4, either in a horizontal or vertical surface, shall be in accordance with Section 505.10.1 or Section 505.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

Reason: Existing language of 504.10 and 505.10 indicate that all "openings ... intended to permit ventilation" are to be protected. WUIC48-24 removes an unnecessary and potentially incomplete list of opening types and locations and retains this core requirement. Opposition testimony when WUIC48-24 was heard during the first Committee Action Hearing raised concerns that the proposed changes would cause an interpretation not previously exercised that penetrations through the building envelope which do not terminate within an enclosed attic, enclosed rafter space, or under-floor area, such as HVAC intake and exhaust openings or clothes dryer exhausts, would require protection.

The proponent is unaware of any instances in which building envelope penetrations which do not provide access to an enclosed attic, enclosed rafter space, or under-floor area have led to issues in wildfires. Therefore, this comment proposes to restrict the ventilation opening provisions to enclosed attic, enclosed rafter space, and under-floor area openings, since these are the openings of concern that evidence indicates can be problematic during a wildfire.

A companion comment to WUIC51-24 is being offered to address this issue in Section 506.5 to provide coordination across all three ignition resistant construction classes.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

Although the existing code language requires protection of all "openings ... intended to permit ventilation," the understood practice is not to protect openings such as clothes dryer exhausts and HVAC intakes and exhausts in accordance with these sections. Based on that understanding, this comment represents a clarification to align code language with current practice, and as such, should cause no change in cost of construction.

Comment (CAH2)# 160

WUIC51-24

IWUIC: 504.10, 504.10.2, 505.10, 505.10.2, 506.5

Proposed Change as Submitted

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org)

2024 International Wildland Urban Interface Code

Revise as follows:

504.10 Vents. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, ~~either in a horizontal or vertical surface~~ , shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

504.10.2 Prescriptive requirements. ~~Where provided, attic ventilation~~ Ventilation openings~~, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents~~ shall be fully covered with noncombustible corrosion-resistant mesh with openings not to exceed $^1/_8$ inch (3.2 mm) or with vents ~~shall be~~ designed and *approved* ~~approved~~ to prevent flame or ember penetration into the structure.

505.10 Vents. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, ~~either in a horizontal or vertical surface,~~ shall be in accordance with Section 505.10.1 or Section 505.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

505.10.2 Prescriptive requirements. ~~Where provided, attic ventilation~~ Ventilation openings~~, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents~~ shall be fully covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or with vents ~~shall be~~ designed and *approved* ~~approved~~ to prevent flame or ember penetration into the structure.

506.5 Vents. ~~Where provided, attic ventilation~~ Ventilation openings~~, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents~~ shall be fully covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or with vents~~shall be~~ designed and *approved*~~approved~~ to prevent flame or ember penetration into the structure.

Reason: This proposal makes changes to the IWUIC vent provisions (1) to clarify that ventilation openings are permitted on sloped surfaces, (2) to remove the ventilation opening size limitation from the prescriptive compliance option, and (3) to require full coverage of ventilation openings regardless of the compliance path. Also, the proposal cleans up the prescriptive options (sections 504.10.2 and 505.10.2) and section 506.5 by removing the unnecessary and potentially confusing list of ventilation opening locations.

Ventilation Openings on Sloped Surfaces. The ventilation sections in the 2024 IWUIC restrict ventilation openings to horizontal or vertical surfaces. This could imply that ventilation openings on sloped surfaces (e.g., rooftops) are not subject to these requirements, which is not understood to be the intention or a desirable interpretation. Ventilation openings on all surfaces of the building should provide protection, and removal of the restriction to horizontal and vertical surfaces from sections 504.10 and 505.10 clarifies that all ventilation openings must be addressed.

Prescriptive Option Size Limitation. The size of ventilation openings is limited to 144 square inches when complying via the prescriptive option. This restriction has been in the IWUIC since the first edition, but no technical justification was discovered during an examination of the available code development records or through discussions with several parties involved in creation of the original IWUIC and

California Building Code Chapter 7A provisions. It is worth noting that California provisions have not included such a size limitation.

Full Coverage of Ventilation Openings. The performance compliance option in sections 504.10.1 and 505.10.1 includes the important provision that ventilation openings be fully covered. This proposal adds this practical requirement to the prescriptive path and to section 506.5.

Cleanup. Sections 504.10.2, 505.10.2 and 506.5 include an unnecessary list of ventilation opening locations. In their simplest form, these sections state, "Where provided, ventilation openings ... in vertical or horizontal surfaces and vents through roofs ...." The intention is clearly to require these provisions to apply to any ventilation opening. The cleanup simplifies the language and eliminates potential misinterpretation of the requirements.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The changes offered in this proposal primarily improve clarity of existing provisions. Removal of the ventilation opening size restriction which is present in the prescriptive requirements should not affect construction cost because the existing performance path already provides a means to demonstrate compliance for vents installed over ventilation openings which are larger than 144 square inches.

WUIC51-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee stated that the reason for the approval of the proposal was that it is an editorial change to bring into compliance what is already acceptable practice. (Vote: 13-0)

WUIC51-24

Individual Consideration Agenda

Comment 1:

IWUIC: 506.5

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

506.5 Ventilation openings~~Vents~~. Ventilation openings shall be fully covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or with vents designed and *approved* to prevent flame or ember penetration into the structure.

Reason: Both WUIC51-24 and WUIC48-24 were supported as submitted during CAH #1. While considering WUIC48-24, the Committee suggested that a change in section titles would improve the proposal. This comment is in direct response to that suggestion. Specifically, it recommends changing the title of Section 506.5 from "Vents" to "Ventilation openings," which aligns the section title with the content of

the section.

This is offered as a comment to WUIC51-24 because section 506.5 was not included in WUIC48-24. A separate comment to WUIC48-24 offers the same change for Sections 504.10 and 505.10.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The comment alters section titles only, which will have no effect on cost of construction.

Comment (CAH2)# 153

Comment 2:

IWUIC: 506.5

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

506.5 Vents. Where provided, ~~V~~ventilation openings of enclosed attics or enclosed rafter spaces in accordance with *International Building Code* Section 1202.2 or of under-floor areas in accordance with *International Building Code* Section 1202.4 shall be fully covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or with vents designed and *approved* to prevent flame or ember penetration into the structure.

Reason: Although the existing language of Section 506.5 in the 2024 IWUIC requires protection of all openings through the building envelope (i.e., by stating the requirements apply to "other ventilation openings in vertical exterior walls and vents through roofs"), the simplification of the vents section charging language in all three ignition resistant classes proposed via WUIC48-24 and WUIC51-24 raised concerns that the new language would cause an interpretation not previously exercised that penetrations through the building envelope which do not terminate within an enclosed attic, enclosed rafter space, or under-floor area, such as HVAC intake and exhaust openings or clothes dryer exhausts, would require protection.

The proponent is unaware of any instances in which building envelope penetrations which do not provide access to an enclosed attic, enclosed rafter space, or under-floor area have led to issues in wildfires. Therefore, this comment proposes to restrict the ventilation opening provisions to enclosed attic, enclosed rafter space, and under-floor area openings, since these are the openings of concern that evidence indicates can be problematic during a wildfire.

The same change is offered in a comment to WUIC48-24 for Sections 504.10 and 505.10 to align the provisions across all three ignition resistant construction classes.

The comment also brings back the opening phrase, "Where provided," so that Section 506.5 is consistent with 504.10 and 505.10.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

Although the existing code language requires protection of all openings, the understood practice is not to protect openings such as clothes dryer exhausts and HVAC intakes and exhausts in accordance with this section. Based on that understanding, this comment represents a clarification to align code language with current practice, and as such, should cause no change in cost of construction.

Comment 3:

IWUIC: 504.10.2, 505.10.2, 506.5

Proponents: Brent Pickett, Western Fire Center, Inc., O'Hagin (brent@westernfire.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.10.2 Prescriptive requirements. Attic vents must be noncombustible and corrosion-resistant. Additionally, all v~~V~~entilation openings shall be fully covered with noncombustible corrosion-resistant material(s) including mesh with openings not to exceed $^{1}/_{8}$ inch (3.2 mm) or with vents designed and *approved* to prevent flame and ~~or~~ ember penetration into the structure.

505.10.2 Prescriptive requirements. Attic vents must be noncombustible and corrosion-resistant. Additionally, all v~~V~~entilation openings shall be fully covered with noncombustible corrosion-resistant material(s) including mesh with openings not to exceed $^{1}/_{8}$ inch (3.2 mm) or with vents designed and *approved* to prevent flame and ~~or~~ ember penetration into the structure.

506.5 Vents. Attic vents must be noncombustible and corrosion-resistant. Additionally, all v~~V~~entilation openings shall be fully covered with noncombustible corrosion-resistant material(s) including mesh with openings not to exceed $^{1}/_{8}$ inch (3.2 mm) or with vents designed and *approved* to prevent flame and ~~or~~ ember penetration into the structure.

Reason: By removing the phrase “either in horizontal or vertical surface” would then allow essentially all vent types to be used, including sloped roof vents as indicated in the proposed rationale.

The existing 504.10.1 section gives performance requirements for vents tested to ASTM E2886, which are not applicable for “roof ridge and off-ridge (field) vents” (see section 1.1 in E2886). This is because many of the existing roof vents are typically too large for the E2886 test apparatus. The proposed change to 504.10.2 gives prescriptive requirements limiting the vent opening and requires that all vent types have #1) “a noncombustible and corrosion-resistant mesh not to exceed ⅛ inch” or be #2) “designed and approved to prevent flame or ember penetration into the structure.”

Since there is not currently a performance standard to resist flame and embers for roof vents, the only method for approval would be the prescriptive approach by requiring ⅛” noncombustible mesh. However, as currently drafted, this approach only attempts to mitigate the ember issue, but it completely neglects the flame concern. Both aspects of fire protection need to be addressed.

Research regarding vents has been performed at our independent third-party fire testing laboratory on multiple on-the-market roof vents using a modified E108 test (fire test for roof coverings) that exposes individual roof vent samples to the flame defined in the E108 with a combustible cotton target in the attic space below the vent opening (sheathing). We found that with some plastic/combustible roof vents (including field, intake, and ridge vents), the dripping and burning plastic dripped down through the vent opening and ignited the cotton target (see images below of some instances).

Based on these findings, it is proposed instead of requiring only the mesh to be noncombustible, that the vent material itself also be noncombustible, which would eliminate the potential for combustible flames from the vent itself to enter the attic space. Ultimately, it will make the structure much less susceptible to exterior WUI fire. Furthermore, the melting of the attic vents creates an inherent safety issue for first responders (see image below).

Bibliography: ASTM E108

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

None. Noncombustible, corrosion-resistant vents are already sold in high volumes across the US.

Comment (CAH2)# 703

WUIC53-24

IWUIC: SECTION 503, 503.1, TABLE 503.1, 503.2, 503.2.1, 503.2.2, 503.2.3, 503.2.4, 503.2.4.1, 503.2.4.2, 503.2.4.3, 503.2.4.3.1, 503.2.4.3.2, 503.2.4.3.3

Proposed Change as Submitted

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov); Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Darcy Davidson, Carlsbad Fire Department, California Fire Prevention Officers (darcy.davidson@carlsbadca.gov)

2024 International Wildland Urban Interface Code

Revise as follows:

SECTION 503
~~IGNITION-RESISTANT~~ WILDLAND CONSTRUCTION AND MATERIAL

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

Delete without substitution:

~~**TABLE 503.1 IGNITION-RESISTANT CONSTRUCTION[a]**~~

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

~~a. Access shall be in accordance with Section 403.~~

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

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

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

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

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

~~c. Conformance based on Section 603.~~

~~d. Conformance based on Section 404.~~

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

Revise as follows:

503.2 Ignition-resistant building material. Ignition-resistant building materials shall <u>be designed for exterior use and</u> comply with any one of the requirements in Section 503.2.1 through ~~503.2.4~~ <u>503.2.4.3.3</u>.

503.2.1 Noncombustible material. Material shall comply with the definition of *noncombustible* materials in Section 202.

503.2.2 Fire-retardant-treated wood. Fire-retardant-treated wood shall be identified for exterior use and shall meet the requirements of Section 2303.2 of the *International Building Code*.

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

503.2.4 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 (3.2 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 503.2.4.1 through 503.2.4.3. **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.

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

503.2.4.2 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.

503.2.4.3 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 503.2.4.3.1 through 503.2.4.3.3, as applicable to the materials and conditions of use.

503.2.4.3.1 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.

503.2.4.3.2 Wood-plastic composite materials. Wood-plastic composite materials shall also 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/m^2 in the horizontal orientation, then weathering in accordance with ASTM D7032 and then retesting in accordance with ASTM E1354 and exhibiting an increase of no more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

503.2.4.3.3 Plastic lumber materials. Plastic lumber materials shall also 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/m^2 in the horizontal orientation, then weathering in accordance with ASTM D6662 and then retesting in accordance with ASTM E1354 and exhibiting an increase of no more than 10 percent in peak rate of heat release when compared to the peak heat release rate of the nonweathered material.

Reason: This code change proposes one construction method for buildings and structures in the wildland-urban interface area. This is a companion proposal to another proposal which deletes Sections 505 and 506. In other words, the other proposal removes Ignition Resistant Construction Classes 2 and 3. Replacing these multiple classifications with a single defined Ignition Resistant Construction as provided by Section 504 of this code. As the IWUIC is intended to provide a minimum standard of protection for the Wildland-Urban Interface areas, a single classification of Ignition Resistant Construction should be provided to accomplish the following goals:

1. Protect lives and property within the Wildland-Urban Interface areas
2. Provide clear and consistent standards, simplifying the construction process
3. Providing a minimum standard of protection, with appendices providing potential pathways for increased protection beyond the minimum

Defensible space is a component of home hardening and the benefits go hand in hand with the construction materials. Embers will find the path of least resistance.

Defensible space is the buffer between your structure and the surrounding area.

Adequate defensible space acts as a barrier to slow or halt the progress of fire that would otherwise engulf your property. It also helps ensure the safety of firefighters defending your home. Defensible space is the first line of defense for your home against wildfire.

The intensity of wildfire fuel management varies within the 100-foot perimeter of the home, with more intense fuels' reduction occurring closer to your home. Start at the home and work your way out to 100 feet or to your property line, whichever is closer. Learn more about the Defensible Space Zones below.

It takes the combination of both Defensible Space and Home Hardening to give your home and property the best chance of surviving a wildfire.

Bibliography: Construction costs for a wildfire-resistant home: California edition - Headwaters Economics

Fire Research Division | NIST

https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2205.pdf

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

Construction costs for a typical single-family (1,750 square-foot) home would increase approximately $2,000 including developer overhead costs

Estimated Immediate Cost Impact Justification (methodology and variables):

In 2004, and as a precursor to California adopting Building Code Chapter 7A, the Office of the State Fire Marshal requested an analysis identifying the costs and benefits associated with proposed regulations in the state's wildfire-prone areas. The study was conducted by Fire Cause Analysis and

evaluated economic and construction data within various business sectors to analyze construction costs if proposed regulations were implemented.33 The study found construction costs for a typical single-family (1,750 square-foot) home would increase approximately $2,000 including developer overhead costs. As an aggregated total at the state level, construction costs would increase approximately $30 million per year for the estimated 14,000 new homes built in areas where regulations would apply. The authors concluded the costs of not implementing regulations, in the form of property losses and suppression costs, exceeded the projected costs for regulations and therefore recommended adopting mitigation standards in wildfire-prone areas.

In 2019, the National Institute of Building Sciences (NIBS) released a report identifying the benefit-cost ratio (BCR) of investing in hazard mitigation, including wildfires.35 The authors found that for every $1 spent on up-front costs for wildfire mitigation, a benefit of $4 was received.

In 2021, the National Research Council of Canada released a study analyzing the benefit-cost ratio for building new construction to comply with the country's wildland urban interface (WUI) Guide.38 In its examination, approximately $12,000 CAD (~$9,500 USD) was added to the overall costs for a new, 2,000-square-foot home to meet the provision of Canada's National WUI Guide. The comprehensive report also examined costs for retrofitting existing structures, as well as transferred costs at the community and national scale. Similar to the NIBS study in 2019, the NRC report found an up-front investment in wildfire-resistant construction and vegetation management yielded benefits that exceeded long-term costs and losses.

WUIC53-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Based on the action and comments on WUIC54. The committee noted that they had a desire to see all these related proposals correlated into one package that could come back in the next cycle. (Vote: 11-2)

WUIC53-24

Individual Consideration Agenda

Comment 1:

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov) requests As Submitted

Reason: The proposal intends to delete Table 503.1 Ignition Resistant Material, which allows for alternative means of reducing building construction materials when defensible space and water supply are considered.

Defensible space and water supply are not constant at any given time. However, a structure's construction is constant, and when a minimum standard is applied, it can greatly assist the building's survivability.

Table 503.1 is flawed in that fire hazard severity areas evaluate the "hazard," not the risk of a structure's ignition potential. "Hazard" is based on the physical conditions that create a likelihood and expected fire behavior over a period without considering mitigation measures such as home hardening, recent wildfire, or fuel reduction efforts. "Risk" is the potential damage a fire can achieve in the area under existing conditions, accounting for any modifications such as fuel reduction projects, defensible space, and ignition-resistant building construction.

Table 502.1 Fire Hazard Severity is outdated and only evaluates critical fire weather frequency, fuel model, and slope. The factors that should be considered in determining fire hazards within wildland areas are fire history, flame length, terrain, local weather, and potential fuel over a 50-year period. Outside of wildlands, a model should consider factors that might threaten buildings, including terrain, weather, urban vegetation cover, blowing embers, proximity to wildlands, fire history, and fire hazards in nearby wildlands. One of the most important factors not considered in Table 502.1 is the areas where winds have been identified as a major cause of wildfire spread;

Another consideration is the increased risk for utility-associated wildfires.

The International Wildland-Urban Interface Code has the opportunity to be the minimum standard for the nation.This table is not a structure loss model regarding the potential ignition of building materials. The IWUIC regulations reduce the risk of embers fanned by wind-blown wildfires from igniting buildings. The roofing, siding, decking, windows, and vents codes shall apply throughout all areas of fire hazard severity.

Wildfire is not just an issue for California!

The Chimney Tops Two fire began November 23, 2016, as a human-caused wildfire in Great Smoky Mountains National Park. On November 28, driven by strong winds, it combined with ignitions from downed powerlines into a swarming conflagration that burned across 11,410 acres into Gatlinburg, Tennessee, and nearby communities. Some 2,400 structures were destroyed or damaged, and 14 people were unnecessarily killed. In a second instance, the Tubbs fire kindled from downed powerlines on the evening of October 8, 2017, became another roaring conflagration. The landscape was parched by prolonged drought, and when the ignition met with powerful east winds, the fire burned 37,000 acres of Sonoma County and into Santa Rosa, California. Some 5,600 structures were destroyed, and 22 people died. In the third instance, the Marshall Fire, beginning December 30, 2021 (Figure 1), was carried by strong winds through dry grass and across 6,000 acres in Boulder County, Colorado, initiating fires in the towns of Superior and Louisville that destroyed 1,056 structures.

Bibliography: Same as original proposal

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Comment (CAH2)# 787

WUIC54-24

IWUIC: SECTION 504, 504.1, 504.2, 504.2.1 (New), 504.2.1, 504.2.3 (New), 504.3, 504.3.1 (New), 504.4, 504.5, 504.5.1 (New), 504.5.1, 504.6, 504.7, 504.7.1, 504.7.2 (New), 504.7.3 (New), 504.7.3.1 (New), 504.7.3.2 (New), 504.7.3.3 (New), 504.7.3.3.1 (New), 504.7.3.3.2 (New), 504.7.3.4 (New), 504.8, 504.8.1 (New), 504.8.2 (New), 504.9, 504.9.1 (New), 504.9.2 (New), 504.9.3 (New), 504.10, 504.10.1, 504.10.2, 504.10.3, 504.11, 504.11.1, 504.11.2 (New), 504.11.3 (New), 504.11.4 (New), 504.11.5 (New), 504.11.6 (New)

Proposed Change as Submitted

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov); Kevin Scott, KH Scott & Associates LLC, self (khscottassoc@gmail.com); Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Darcy Davidson, Carlsbad Fire Department, California Fire Prevention Officers (darcy.davidson@carlsbadca.gov)

2024 International Wildland Urban Interface Code

Revise as follows:

SECTION 504
~~CLASS 1 IGNITION-RESISTANT CONSTRUCTION~~ CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE

504.1 General. ~~Class 1 ignition~~ Ignition-resistant construction shall be in accordance with Sections 504.2 through ~~504.11~~ 504.11.6.

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

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

Add new text as follows:

504.2.1 Roof covering gaps. Roof covering gaps and voids shall be protected as follows:

1. Where the roofing covering profile has an airspace under the roof covering and is installed over a combustible deck, the combustible deck shall be protected by any of the following:
   1.1 Install a 72-pound (32.7 kg) cap sheet, complying with ASTM D3909, over the roof deck.
   1.2 Install mineral wool board or other noncombustible material with a minimum thickness of 1 inch (25.4 mm) between the roofing material and the wood framing or deck.
   1.3 Install a Class A fire classification roof underlayment, tested in accordance with ASTM E108 or UL 790. If the sheathing consists of exterior fire-retardant treated wood, the underlayment shall not be required to comply with a Class A classification.
2. Bird stops shall be used at the eaves, when the profile fits, to prevent debris from entering at the eave. Hip and ridge caps shall be mudded to prevent intrusion of fire or embers.

Revise as follows:

~~**504.2.1**~~ **504.2.2 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~~ 7 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

Add new text as follows:

504.2.3 Skylights. Skylights, including tubular daylighting devices and sloped glazing shall comply with section 504.8

Revise as follows:

504.3 Protection of enclosed eaves. The exposed underside of enclosed roof ~~Eaves~~eaves and soffits shall be protected on the exposed underside by any of the following:

1. Noncombusible materials.
2. ~~ignition-resistant~~ Ignition-resistant materials . ~~or by~~
3. Fire-retardant-treated wood labeled for exterior use.
4. ~~materials~~ Materials *approved* for not less than 1-hour *fire-resistance-rated construction* on the exterior side.,
5. 2-inch (51 mm) nominal dimension lumber., or
6. 1-inch (25 mm) nominal fire-retardant-treated lumber or $^{3}/_{4}$-inch (19.1 mm) nominal fire-retardant-treated plywood~~,~~ identified for exterior use ~~and meeting the requirements of Section 2303.2 of the International Building Code~~.
7. Boxed-in roof eave soffit assemblies with an underside that meets the performance criteria in Section 504.7.2 when tested in accordance with the test procedures set forth in ASTM E2957.

Fascias are required and shall be ~~protected on the backside by~~ ignition-resistant materials, fire retardant-treated wood labeled for exterior use ~~or by~~ materials *approved* for not less than 1-hour *fire-resistance-rated construction* or 2-inch (51 mm) nominal dimension lumber.

Add new text as follows:

504.3.1 Protection of open eaves. The exposed roof deck on the underside of unenclosed roof eaves shall consist of one or more of the following:

1. Noncombustible material.
2. Ignition-resistant material.
3. Fire-retardant-treated wood labeled for exterior use.
4. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side.
5. 2-inch (51 mm) nominal dimension lumber.
6. One layer of 5/8-inch (16 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the roof deck.
7. The exterior portion of a 1-hour fire-resistance-rated exterior assembly applied to the underside of the roof deck designed for exterior fire exposure, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.

Fascias, if provided, shall be of fire-retardant-treated wood, ignition-resistant materials, materials approved for not less than 1-hour fire-resistance -rated construction or 2-inch (51 mm) nominal dimension lumber.

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

Revise as follows:

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

1. ~~Materials *approved* for not less than~~ 1-hour *fire-resistance-rated construction* ~~on the exterior side~~.
2. *Approved noncombustible* materials.
3. Heavy timber. ~~or *log wall construction*~~ Assembly of sawn lumber or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks splined, tongue-and-grove or set close together and well spiked.
4. Log wall construction. Assembly that has been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in ASTM E2707 with the conditions of acceptance shown in Section 504.9.3.
5. Wall assemblies suitable for exterior fire exposure containing one layer of 5/8-inch (15.9 mm) Type X gypsum sheathing applied behind the exterior wall covering or cladding on the exterior side of the framing.

~~4.~~ 6 . Fire-retardant-treated wood ~~on the exterior side. The fire-retardant-treated wood~~ shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

~~5~~ 7. Ignition-resistant materials complying with Section 503.2 ~~on the exterior side~~.

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

Add new text as follows:

504.5.1 Exterior wall coverings. The exterior wall covering shall comply with one or more of the following requirements, except as permitted for exterior walls complying with Section 504.5:

1. Noncombustible material.
2. Ignition-resistant material labeled for exterior use.
3. Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the International Building Code.

Revise as follows:

504.5.~~1~~ 2 Flashing. A minimum of 6 inches (152 mm) of metal flashing or noncombustible material applied vertically on the exterior of the wall shall be installed at the ground, decking and roof intersections.

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

Revise as follows:

504.7 ~~Appendages and projections~~ Projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, ~~such as~~other than 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*~~ 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.~~
4. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.
5. One layer of 5/8-inch (15.9 mm) Type X gypsum sheathing applied behind the exterior covering on the underside of the ceiling.
6. The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119, applied to the underside of the ceiling assembly, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
7. The underside of a floor projection assembly that meets the performance criteria in Section 504.7.2 when tested in accordance with the test procedures set forth in ASTM E2957.

504.7.1 ~~Underfloor areas~~ Underside of projections. ~~Where the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5.~~
The underside of projections shall be enclosed to grade in accordance with the requirements of this chapter or the underside of the exposed underfloor shall be protected by one or more of the following:

Exception: Structural columns and beams are not required to be protected in accordance with Section 504.7.1 when constructed with sawn lumber or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks shall be splined, tongue-and-groove, or set close together and well spiked.

1. Noncombustible material.
2. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section 503.2.
3. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the International Building Code.
4. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.
5. One layer of 5/8-inch (15.9 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the floor projection.
6. The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119 or UL 263, applied to the underside of the floor, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
7. The underside of a floor assembly that meets the performance criteria in Section 504.7.2 when tested in accordance with the test procedures set forth in ASTM E2957.

Add new text as follows:

504.7.2 Conditions of acceptance for ASTM E2957. The ASTM E2957 test shall be conducted on a minimum of three test specimens and meet the conditions of acceptance in Items 1 through 3 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 of the eaves or horizontal projection assembly at any time.
2. Absence of structural failure of the eaves or horizontal projection subassembly at any time.
3. Absence of sustained combustion of any kind at the conclusion of the 40-minute test.

504.7.3 Decks. The walking surface material of decks, porches, balconies and stairs shall comply with the requirements of Sections 504.7.3.1 through 504.7.3.4.

504.7.3.1 Flashing. A minimum of a 6-inch (150 mm) metal flashing, applied vertically on the exterior of the wall, shall be installed at all deck-to-wall intersections.

504.7.3.2 Decking surfaces. The walking surface material of decks, porches, balconies and stairs shall be constructed with any of the following materials:

1. Material that complies with the performance requirements of Section 504.7.3.3.
2. Ignition-resistant material that complies with the performance requirements of Section 504.7.2.
3. Fire-retardant-treated wood labeled for exterior use and shall meet the requirements of section 2302 of the International Building Code.
4. Noncombustible material.
5. Any material that complies with the performance requirements of Section 504.7.3.4 when tested in accordance with ASTM E2632 provided that any attached exterior wall covering is noncombustible or ignition-resistant materials. **Exception:** Wall material shall be permitted to be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread index.

504.7.3.3 Performance requirements for Section 504.7.3.2, Item 1. Materials shall be tested in accordance with both ASTM E2632 and ASTM E2726 and comply with the conditions of acceptance in Sections 504.7.3.3.1 and 504.7.3.3.2. The material shall also be tested in accordance with ASTM E84 or UL 723 and comply with the performance requirements of Section 503.2.4.

504.7.3.3.1 Conditions of acceptance for ASTM E2632. . The ASTM E2632 test shall be conducted on a minimum of three test specimens and meet the conditions of acceptance in Items 1 through 3 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. Peak heat release rate of less than or equal to 25 kW/ft² (269 kW/m²).
2. Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-min observation period.
3. Absence of falling particles that are still burning when reaching the burner or floor.

504.7.3.3.2 Conditions of acceptance for ASTM E2726. The ASTM E2726 test shall be conducted, using a “Class A” size roof test brand, 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 sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.
2. Absence of falling particles that are still burning when reaching the burner or floor.

504.7.3.4 Performance requirements for Section 504.7.3.2, Item 5. The ASTM E2632 test shall be conducted on a minimum of three test specimens and meet the condition of acceptance in Item 1 below. If any one of the three tests does not meet the condition of acceptance, three additional tests shall be performed. All three additional tests must show a peak heat release rate shall be 25 kW/ft² (269 kW/ m²) or less.

Revise as follows:

504.8 Exterior glazing. Exterior windows, window walls and exterior glazed doors having a glazed area of 25 percent or more of the door area, windows within exterior doors, and skylights shall be constructed of any of the following:

1. ~~tempered glass, multilayered glazed panels,~~ Multilayered glazed panels with at least one tempered panel or dome complying with Section 2406 of the International Building Code. ~~,~~
2. ~~glass~~ Glass block units. ~~, or have a~~
3. A minimum fire-protection rating of ~~not less than~~ 20 minutes when tested in accordance with NFPA 257 or UL 9, and shall be exempt from the hose stream test.

Add new text as follows:

504.8.1 Structural glass veneer. The wall assembly behind structural glass veneer shall comply with Section 504.5.

504.8.2 Operable skylights. Operable skylights shall be protected by a non-combustible mesh screen and the dimensions of the openings in the screen shall not exceed ⅛ inch (3.2 mm).

Revise as follows:

504.9 Exterior doors. Exterior doors shall be constructed in accordance with any of the following:

1. ~~*approved noncombustible*~~ Noncombustible construction. ~~,~~
2. ~~solid core~~ Solid-core wood not less than $1\frac{3}{4}$ inches thick (44 mm). ~~, or~~
3. ~~have~~ Have a fire protection rating of not less than 20 minutes when tested according to NFPA 252.
4. The exterior door shall be constructed of solid core wood that complies with the following requirements:
   4.1. Stiles and rails shall not be less than 1 3/8 inches (35 mm) thick.
   4.2. Panels shall not be less than 1¼ inches thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than 3/8 inch (35 mm) thick.
5. The exterior surface or cladding shall be tested to meet the performance requirements of Section 504.9.3 when tested in accordance with ASTM E2707 with the conditions of acceptance shown in Section 504.9.3.

Windows within doors and exterior glazed doors shall be in accordance with Section 504.8.

~~**Exception:** Vehicle access doors.~~

Add new text as follows:

504.9.1 Garage doors. Automatic garage door openers for vehicle doors serving a residential building shall be equipped with a battery backup function.

504.9.2 Garage door perimeter gap. Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides and tops of doors, from exceeding ⅛ inch (3.2 mm). Gaps between doors and door openings shall be controlled by one of the following methods:

1. Weather-stripping products shall be constructed of materials which comply with both of the following:
   1.1. The tensile strength of the material shall be tested in accordance with ASTM D638 before and after exposure to ASTM G155 for a period of 2,000 hours, and the maximum allowable difference in tensile strength values between exposed and non-exposed samples shall not exceed 10 percent.
   1.2. When tested to UL 94, the materials shall have a flammability rating of V-2 or better.
2. Door overlaps onto jambs and headers.

3. Garage door jambs and headers covered.

504.9.3 Conditions of acceptance for 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.

504.10 Vents. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

504.10.1 Performance requirements. Ventilation openings shall be fully covered with listed vents, tested in accordance with ASTM E2886, to 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).

Delete and substitute as follows:

~~**504.10.2 Prescriptive requirements.** Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.~~

504.10.2 Off ridge and ridge vents. Vents that are installed on a sloped roof, such as dormer vents, shall comply with all of the following:

1. Vents shall be covered with a mesh where the dimensions of the mesh therein shall be a minimum of 1/16 inch (1.6 mm) and shall not exceed ⅛ inch (3.2 mm) in diameter.
2. The mesh material shall be noncombustible.
3. The mesh material shall be corrosion resistant.

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

Delete and substitute as follows:

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

~~International Building Code.~~

504.11 Accessory buildings and miscellaneous structures. Accessory buildings and miscellaneous structures shall be constructed to conform to the ignition-resistance requirements of Sections 504.11.1 through 504.11.6.

~~**504.11.1 Underfloor areas.** Where the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 504.5 or underfloor protection in accordance with Section 504.6. **Exception:** The enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.~~

504.11.1 Applicability. Sections 504.11.2 through 504.11.6 apply to accessory buildings, and attached or detached miscellaneous structures, on the same lot as an applicable building, including but not limited to trellises, arbors, patio covers, gazebos and similar structures. **Exceptions:**

1. Decks shall comply with the requirements of Section 504.7.3.
2. Awnings and canopies shall comply with the requirements of Section 3105 of the International Building Code.

Add new text as follows:

504.11.2 Miscellaneous structures and accessory buildings within 3 feet.. Miscellaneous structures and accessory buildings of any size, when separated from an applicable building on the same lot by a distance of less than 3 feet (914 mm), shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 503.2.4.

504.11.3 Accessory buildings greater than 120 square feet, located 3 feet or more but less than 50 feet. Accessory buildings that are greater than 120 square feet (11.15 m^2) in size and separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 503.2.4., located 3 feet or more but less than 50 feet.

504.11.4 Accessory buildings 120 square feet or less, located 3 feet or more but less than 50 feet. When required by the enforcing agency, accessory buildings 120 square feet (11.15 m^2) or less and separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 503.2.4.

504.11.5 Miscellaneous structures located 3 feet or more but less than 50 feet. When required by the enforcing agency, miscellaneous structures that require a permit and are separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 240 mm) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 503.2.4.

504.11.6 Roof construction. Roof assemblies and roof coverings of accessory buildings required to be constructed entirely of noncombustible materials or of ignition-resistant materials shall comply with Sections 504.2 and 504.2.1.

Reason: This code change is to propose one construction method for building and structures in the wildland area. This is the companion to another proposal to delete sections 505 and 506 with the intent to remove Ignition Resistant Construction Classes 2 and 3. Replacing these multiple classifications will be a single defined Ignition Resistant Construction as provided by Section 504. As the IWUIC is intended to provide a minimum standard of protection for the Wildland-Urban Interface areas, a single classification of Ignition Resistant Construction should be provided to accomplish the following goals:

1. Protect lives and property within the Wildland-Urban Interface areas

2. Provide clear and consistent standards, simplifying the construction process
3. Provide a minimum standard of protection, with appendices providing potential pathways for increased protection beyond the minimum

Findings during a NIST case study of the 2018 Camp Fire (https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2135.pdf) found that a primary factor in fire spread was significant ember exposure. As stated in the case study "In agreement with the other NIST case studies of WUI fires, the Camp Fire has demonstrated that embers can have significant impact on WUI communities. Laboratory and field work by NIST [57] has demonstrated that embers with enough energy to cause ignitions are readily generated from parcel-level combustibles such as landscaping mulch, fences, and firewood piles. These parcel-level fuels can cause ignitions over 40 m (130 ft) downwind. Ember ignitions downwind from parcel-level combustibles enable fire to readily spread from parcel to parcel. In high hazard areas, WUI structures therefore need to be able to withstand the exposures generated from both wildland and parcel-level combustibles." (A Case Study of the Camp Fire, pg.141)

Given the distances that embers can travel, this minimum standard of protection should be across all Wildland-Urban Interface areas; regardless of whether they have been designated as Moderate, High or Extreme hazards. An analysis of California structures damaged by wildfire in 2017 found that more homes were damaged in the areas designated as moderate fire hazard severity (3645 damaged) than those damaged in areas designated as very high fire hazard severity (2215 damaged). Of those damaged, a similar percentage of those structures were recorded as destroyed; 92% of damaged structures being destroyed in moderate fire hazard severity zones, and 86% of damaged structures being destroyed in very high fire hazard severity zones. This data indicates that the requirements proposed in 504 which mirror the California Building Code Chapter 7A requirements are working.

Construction Costs for a Wildfire Resistant Home, California Edition (headwaterseconomics.org)

The Headwaters Economics study by the Insurance Institute for Business & Home Safety outlines that California's Chapter 7A requirements should be the bare minimum. If there is a proposal for three construction versions, using the proposed code provisions as the minimum with an enhanced version and an optimum version for best performance standards. "In preliminary research conducted by Baylis and Boomhower (2021), the authors examined home survivability factors for nearly 50,000 homes exposed to wildfires between 2007 and 2020 across California. The authors reported that a home built in 2010 or later was nearly 40% less likely to be destroyed by a wildfire compared to a home built in 1985 or before. Home survivability was closely correlated to modern building codes requiring homeowner mitigation measures. Additionally, a home was more likely to survive if its nearest neighbor also complied with recent mitigation regulations resulting in a positive net spillover effect for the larger neighborhood.

Roof - Section 504.2

Roofs are highly vulnerable to ignition due to their relatively large horizontal surface area. The exposure of roof coverings to a range of climatic conditions, including wind, rain, and sun, means the roof covering will require maintenance and eventual replacement. Many Class A fire-rated roof covering options are available (e.g., asphalt fiberglass composition shingles). A main reason the roof is vulnerable is because the roof edge—including gutters and roof-to-wall intersections where roof covering meets other materials (e.g., siding used in dormers and split-level homes)—is exposed to ember ignitions. These areas must be properly protected by adding additional flashing at roof-to-wall locations.

Under-Eave Area - Sections 504.3 and 504.3.1

Research suggests eaves are extremely important in structure survivability. Eaves play an important role for building design but they also create vulnerabilities and pathways for the building to ignite. Embers can travel through vents in the eave into the attic and accumulate in gaps between blocking and rafters in open-eave construction. Should flames reach the under-eave area, open eaves can also trap heat. Once there is an ignition in the under-eave area, fire will spread laterally more quickly.

Vents in the under-eave area are inlet openings and therefore allow air to enter the attic space. During a wildfire, vent openings can allow the entry of wind-blown embers into the interior attic space. If combustible materials in the attic ignite, the house can burn from the inside out. The importance of ember and flame entry through vents during a wildfire, and as per requirements in Chapter 7A, have resulted in the development of vents designed to resist the intrusion of flames and embers.

Exterior Wall and Wall Covering - Sections 504.5 and 504.5.1

Exterior walls and components in the wall assembly can be vulnerable if exposed to embers, flames, or prolonged exposure to radiant heat from burning items located close to the home. These exposures can ignite combustible siding and the resulting flames can spread vertically and laterally to other wall components such as windows and the under-eave area. Siding extending close to the ground can be vulnerable to ignition by embers accumulating at the base of the wall that ignite it or components in the wall assembly (e.g., wood sheathing). Requirements are included to address the wall assembly itself, along with the exterior wall covering. The wall could be fire resistant, but a combustible exterior wall covering could carry fire up the wall to the eaves and attic.

Attached Deck - Sections 504.7.3 through 504.7.3.4

Similar to a roof, a deck can cover a large horizontal surface area and can be vulnerable to embers and under-deck flame impingement exposures. A burning deck can expose the side of the house to extended radiant heat and/or direct flame contact. The deck walking surface and structural support members, as well as what is stored on or below the deck are therefore important considerations.

Most commonly used deck board products (including wood and plastic composite boards) are combustible. Decks with noncombustible walking surfaces include lightweight concrete or a flagstone product. Regardless of the walking surface, decks are typically supported by solid wood joists, beams, and columns that will be vulnerable to ignition if nearby combustible materials ignite.

Enclosing the under-deck area vertically around the perimeter can minimize the accumulation of vegetative debris, vegetation, and other combustible materials. For enclosed decks, installing vents to ensure that excessive moisture does not accumulate in the under-deck area is critical to avoid moisture-related degradation.

Glazing - Sections 504.8 through 804.8.2

Window manufacturers and suppliers indicated that where dual-pane windows are required to be tempered, most window manufacturers only supply windows with both panes tempered. Other manufacturers will supply what the customer requests, and will only provide one-pane tempered. Since all comparative versions of the wildfire-resistant home are compliant, the price of windows would not result in a significant cost difference.

Doors - Section 504.9

Doors and door frames can fail for the same reasons as windows. Embers can accumulate in the small gaps between the door and frame, resulting in ignition of the door-framing and weather-sealing material.

Vents - Section 504.10 through 504.10.3

Flame- and ember-resistant vents are required to be listed. Currently, only vents in a vertical orientation are listed. Where vents are installed in other than by the OSFM Building Materials Listing Program, will be required for all attic and crawl space vents.

Accessory Structures - Section

The following table helps visualize the resultant requirements.

NIST Technical note 2205 explains how the mitigation of accessory structures help in hardening a building in the wildland area.

https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2205.pdf

Bibliography: Construction costs for a wildfire-resistant home: California edition - Headwaters Economics

Fire Research Division | NIST

https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2205.pdf

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

Construction costs for a typical single-family (1,750 square-foot) home would increase approximately $2,000 including developer overhead costs.

Estimated Immediate Cost Impact Justification (methodology and variables):

In 2004, and as a precursor to California adopting Building Code Chapter 7A, the Office of the State Fire Marshal requested an analysis identifying the costs and benefits associated with proposed regulations in the state's wildfire-prone areas. The study was conducted by Fire Cause Analysis and evaluated economic and construction data within various business sectors to analyze construction costs if proposed regulations were implemented.33 The study found construction costs for a typical single-family (1,750 square-foot) home would increase approximately $2,000 including developer overhead costs. As an aggregated total at the state level, construction costs would increase approximately $30 million per year for the estimated 14,000 new homes built in areas where regulations would apply. The authors concluded the costs of not implementing regulations, in the form of property losses and suppression costs, exceeded the projected costs for regulations and therefore recommended adopting mitigation standards in wildfire-prone areas.

In 2019, the National Institute of Building Sciences (NIBS) released a report identifying the benefit-cost ratio (BCR) of investing in hazard mitigation, including wildfires.35 The authors found that for every $1 spent on up-front costs for wildfire mitigation, a benefit of $4 was received.

In 2021, the National Research Council of Canada released a study analyzing the benefit-cost ratio for building new construction to comply with the country's wildland urban interface (WUI) Guide.38 In its examination, approximately $12,000 CAD (~$9,500 USD) was added to the overall costs for a new, 2,000-square-foot home to meet the provision of Canada's National WUI Guide. The comprehensive report also examined costs for retrofitting existing structures, as well as transferred costs at the community and national scale. Similar to the NIBS study in 2019, the NRC report found an up-front investment in wildfire-resistant construction and vegetation management yielded benefits that exceeded long-term costs and losses.

Attached Files

- **accessory table.jpg**
  https://www.cdpaccess.com/proposal/10556/30799/files/download/4420/
- **NIST.TN.2205.pdf**
  https://www.cdpaccess.com/proposal/10556/30799/files/download/4412/
- **2017 fire data.pdf**
  https://www.cdpaccess.com/proposal/10556/30799/files/download/4406/
- **2022_HE_IBHS_WildfireConstruction reduced.pdf**
  https://www.cdpaccess.com/proposal/10556/30799/files/download/4405/

WUIC54-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The comparison between California and the many other states that have just adopted the code and what their results are. There is a lot of information in the proposal and there was a lot of attempts at making modifications that the committee really did not want to try to do. The desire to see the proposal, along with what has been already approved, being combined into the proposal in some way, shape or form, or take out those

things that has already addressed. The reason for this is that the proposal is confusing, and it is difficult to prepare a position for it with all the other changes being made by other proposals. The code is not broken the way it is now. There are enhancements forthcoming and going through and affordable housing, which this country desperately needs, especially for lower to median incomes, this proposal works against these objectives. Using these standards, a lot of multifamily housing is to the point where you have already got automatic fire sprinklers and you are just adding more and more building standards on top, and it is tough to compete. It just has to be added a little bit slower or it is really going to be tough for affordable housing if they have to build in these areas and at the same time try to be cost effective, keep rents down for residents. (Vote: 11-2)

WUIC54-24

Individual Consideration Agenda

Comment 1:

IWUIC: 504.2, 504.2.1, 504.2.2, 504.5, 504.6, 504.7, 504.7.1, 504.7.3.2, 504.7.3.4, 504.9, 504.9.1, 504.9.2, 504.10, 504.10.1, 504.10.3, 504.11, UL Chapter 07 (New)

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

504.2 Roof assembly. Roofs shall have a *roof assembly* that complies with a Class A fire classification when tested in accordance with ASTM E108 or UL 790. . **Exceptions:** The following assemblies are exempt from testing and shall be considered as a classification equivalent to Class A.

1. ~~Class A *roof*~~ *Roof assemblies* include those with coverings of brick, masonry or an exposed concrete *roof deck*.
2. ~~Class A *roof*~~ *Roof assemblies* also include with ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on noncombustible decks or ferrous, copper or metal sheets installed without a *roof deck* on noncombustible framing.
3. ~~Class A *roof*~~ *Roof assemblies* include minimum 16 oz/sq ft (0.0416 kg/m^2) copper sheets installed over combustible *roof decks*.
4. Roof assemblies of slate roof covering over ASTM D226, Type II underlayment over combustible decks.

504.2.1 Roof covering gaps. ~~Roof covering gaps and voids~~ Where there is a void under the roof covering it shall be protected as follows:

1. Where the roofing is installed over a combustible deck, and the roofing ~~covering~~ profile ~~has~~ creates an airspace under the roof covering, the installation shall comply with the following: ~~and is installed over a combustible deck, the combustible deck shall be protected by any of the following~~:
   1.1 Install a 72-pound (32.7 kg) cap sheet, complying with ASTM D3909, over the roof deck.
   1.2 Install mineral wool board or other noncombustible material with a minimum thickness of 1 inch (25.4 mm) between the roofing material and the wood framing or deck.
   1.3 Install a Class A fire classification roof underlayment, tested in accordance with ASTM E108 or UL 790. If the sheathing consists of exterior fire-retardant treated wood, the underlayment shall not be required to comply with a Class A classification.

2. Bird stops shall be used at the eaves, when the profile fits, to prevent debris from entering at the eave. Hip and ridge caps shall be mudded to prevent intrusion of fire or embers.

504.2.2 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 (32.7 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley.

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

1. 1-hour *fire-resistance-rated construction* .
2. *Approved noncombustible* materials.
3. Heavy timber. Assembly of sawn lumber or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks splined, tongue-and-grove or set close together and well spiked.
4. Log wall construction. Assembly that has been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in ASTM E2707 with the conditions of acceptance shown in Section 504.9.3.
5. Wall assemblies suitable for exterior fire exposure containing one layer of 5/8-inch (15.9 mm) Type X gypsum sheathing applied behind the exterior wall covering or cladding on the exterior side of the framing.
6. Fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.
7. Ignition-resistant materials complying with Section 503.2 .

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

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.

Revise as follows:

504.7 Projections. *Unenclosed accessory structures* attached to buildings with habitable spaces and projections, other than decks, shall be *heavy timber construction* or constructed of one of the following:

1. 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.
4. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.
5. One layer of 5/8-inch (15.9 mm) Type X gypsum sheathing applied behind the exterior covering on the underside of the ceiling.
6. The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119, or UL 263 applied to the underside of the ceiling assembly, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
7. The underside of a floor projection assembly that meets the performance criteria in Section 504.7.2 when tested in accordance with the test procedures set forth in ASTM E2957.

504.7.1 Underside of projections.

The underside of projections shall be enclosed to grade in accordance with the requirements of this chapter or the underside of the exposed underfloor shall be protected by one or more of the following:

Exception: Structural columns and beams are not required to be protected in accordance with Section 504.7.1 when constructed with sawn lumber or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks shall be splined, tongue-and-groove, or set close together and well spiked.

1. Noncombustible material.
2. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section 503.2.
3. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the International Building Code.
4. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.
5. One layer of 5/8-inch (15.9 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the floor projection.
6. The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119 or UL 263, applied to the underside of the floor, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
7. The underside of a floor assembly that meets the performance criteria in Section 504.7.2 when tested in accordance with the test procedures set forth in ASTM E2957.

504.7.3.2 Decking surfaces. The walking surface material of decks, porches, balconies and stairs shall be constructed with any of the following materials:

1. Material that complies with the performance requirements of Section 504.7.3.3.
2. Ignition-resistant material that complies with the performance requirements of Section 504.7.2.
3. Fire-retardant-treated wood labeled for exterior use and shall meet the requirements of section 2302 of the International Building Code.
4. Noncombustible material.
5. ~~Any material that complies with the performance requirements of Section 504.7.3.4 when tested in accordance with ASTM E2632 provided that any attached exterior wall covering is noncombustible or ignition-resistant materials.~~ ~~**Exception:** Wall material shall be permitted to be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread index.~~

504.7.3.4 Performance requirements for Section 504.7.3.2, Item 5. The ASTM E2632 test shall be conducted on a minimum of three test specimens and meet the condition of acceptance in Item 1 below. If any one of the three tests does not meet the condition of acceptance, three additional tests shall be performed. All three additional tests must show a peak heat release rate shall be 25 kW/ft² (269 kW/ m²) or less.

Revise as follows:

504.9 Exterior doors. Exterior doors shall be constructed in accordance with any of the following:

1. Noncombustible construction.
2. Solid-core wood not less than $1\frac{3}{4}$ inches thick (44 mm).
3. Have a fire protection rating of not less than 20 minutes when tested according to NFPA 252, UL10B or UL10C.

4. The exterior door shall be constructed of solid core wood that complies with the following requirements:
    4.1. Stiles and rails shall not be less than 1 3/8 inches (35 mm) thick.
    4.2. Raised Panels shall not be less than 1¼ inches (32mm) thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than 3/8 inch (35 mm) thick.
5. The exterior surface or cladding shall be tested to meet the performance requirements of Section 504.9.3 when tested in accordance with ASTM E2707 with the conditions of acceptance shown in Section 504.9.3.

Windows within doors and exterior glazed doors shall be in accordance with Section 504.8.

504.9.1 Garage doors. Automatic garage door openers for vehicle doors serving a residential building shall be equipped with a battery backup function.

504.9.2 Garage door perimeter gap. Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides and tops of doors, from exceeding ⅛ inch (3.2 mm). Gaps between doors and door openings shall be controlled by one of the following methods:

1. Weather-stripping products shall be constructed of materials which comply with both of the following:
    1.1. The tensile strength of the material shall be tested in accordance with ASTM D638 before and after exposure to ASTM G155 for a period of 2,000 hours, and the maximum allowable difference in tensile strength values between exposed and non-exposed samples shall not exceed 10 percent.
    1.2. When tested to UL 94, the materials shall have a flammability rating of V-2 or better.
2. Door overlaps onto jambs and headers.
3. Garage door jambs and headers covered.

504.10 Vents. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

504.10.1 Performance requirements. Ventilation openings shall be fully covered with listed vents, tested in accordance with ASTM E2886, to 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).

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

504.11 Accessory buildings and miscellaneous structures. Accessory buildings and miscellaneous structures shall be constructed to conform to the ignition-resistance requirements of Sections 504.11.1 through 504.11.6.

Add new standard(s) as follows:

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

10B—2008	Fire Tests of Door Assemblies—with Revisions through May 2020
10C—2016	Positive Pressure Fire Tests of Door Assemblies—with Revisions through May 2021

Reason: The proposed revisions are based on the CAH1 testimony and coordination with other IWUIC-approved proposals.

Bibliography: Same as original proposal

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

Same as the original proposal. the revisions are coordination and editorial in nature

Comment (CAH2)# 795

WUIC55-24

IWUIC: SECTION 505, 505.1, 505.2, 505.2.1, 505.3, 505.4, 505.5, 505.6, 505.7, 505.7.1, 505.8, 505.9, 505.10, 505.10.1, 505.10.2, 505.10.3, 505.11, 505.11.1, SECTION 506, 506.1, 506.2, 506.2.1, 506.3, 506.4, 506.5

Proposed Change as Submitted

Proponents: Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov)

2024 International Wildland Urban Interface Code

Delete without substitution:

~~SECTION 505~~
~~CLASS 2 IGNITION-RESISTANT CONSTRUCTION~~

Revise as follows:

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

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

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

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

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

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

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

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

~~**505.6 Underfloor enclosure.** Buildings or structures shall have underfloor areas enclosed to the ground, with exterior walls in accordance with Section 505.5. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or *heavy timber construction* or fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for~~

exterior use and meet the requirements of Section 2303.2 of the International Building Code.

505.7 Appendages and projections. *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.

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

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

505.9 Exterior doors. Exterior doors shall be *approved noncombustible* construction, solid core wood not less than $1\frac{3}{4}$ inches thick (45 mm), or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section 505.8. **Exception:** Vehicle access doors.

505.10 Vents. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 505.10.1 or Section 505.10.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.

505.10.1 Performance requirements. Ventilation openings shall be fully covered with listed vents, tested in accordance with ASTM E2886, to 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).

505.10.2 Prescriptive requirements. Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.

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

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

505.11.1 Underfloor areas. Where the detached *accessory structure* is located and constructed so that the structure or any portion

~~thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior wall construction in accordance with Section 505.5 or underfloor protection in accordance with Section 505.6.~~ ~~**Exception:** The enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction* or heavy-timber construction or fire-retardant-treated wood on the exterior side. The fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.~~

Delete without substitution:

~~SECTION 506~~
~~CLASS 3 IGNITION-RESISTANT CONSTRUCTION~~

Revise as follows:

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

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

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

~~**506.3 Underfloor enclosure.** Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls. **Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are protected as required for exterior 1-hour *fire-resistance-rated construction*, fire-retardant-treated wood or *heavy-timber construction*. Fire-retardant-treated wood shall be labeled for exterior use and meet the requirements of Section 2303.2 of the International Building Code.~~

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

~~**506.5 Vents.** Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929 m^2) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.~~

Reason: This code change is to propose one construction method for building and structures in the wildland area. This is the companion to another proposal to delete sections 505 and 506 with the intent to remove Ignition Resistant Construction Classes II and III. Replacing these classifications will be a single defined Ignition Resistant Construction as provided by Section 504 of this code. As the IWUIC is intended to provide a minimum standard of protection for the Wildland-Urban Interface areas, a single classification of Ignition Resistant Construction should be provided to accomplish the following goals:

1. Protect lives and property within the Wildland-Urban Interface areas

2. Provide clear and consistent standards, simplifying the construction process

3. Providing a minimum standard of protection, with appendices providing potential pathways for increased protection beyond the minimum

Findings during a NIST case study of the 2018 Camp Fire (https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2135.pdf) found that

a primary factor in fire spread was significant ember exposure. As stated in the case study "In agreement with the other NIST case studies of WUI fires, the Camp Fire has demonstrated that embers can have significant impact on WUI communities. Laboratory and field work by NIST [57] has demonstrated that embers with enough energy to cause ignitions are readily generated from parcel-level combustibles such as landscaping mulch, fences, and firewood piles. These parcel-level fuels can cause ignitions over 40 m (130 ft) downwind. Ember ignitions downwind from parcel-level combustibles enable fire to readily spread from parcel to parcel. In high hazard areas, WUI structures therefore need to be able to withstand the exposures generated from both wildland and parcel-level combustibles." (A Case Study of the Camp Fire, pg.141)

Given that this far distances that embers can travel, this minimum standard of protection should be across the Wildland-Urban Interface areas; regardless of whether they have been designated as Moderate, High or Extreme hazards. In an analysis of California structures damaged by wildfire in 2017 found that of more homes were damaged in the areas designated as moderate fire hazard severity (3645 damaged) than those damaged in areas designated as very high fire hazard severity (2215 damaged). Of those damaged, a similar percentage of those structures were recorded as destroyed. 92% of damaged structures being destroyed in moderate fire hazard severity zones. 86% of damaged structures being destroyed in very high fire hazard severity zones. This data indicates that the requirements proposed in 504 which mirror the California 7A requirements are working.

In an analysis of California structures damaged by wildfire in 2017 found that of more homes were damaged in the areas designated as moderate fire hazard severity (3645 damaged) than those damaged in areas designated as very high fire hazard severity (2215 damaged). Of those damaged, a similar percentage of those structures were recorded as destroyed. 92% of damaged structures being destroyed in moderate fire hazard severity zones. 86% of damaged structures being destroyed in very high fire hazard severity zones.

Whereas the designated fire hazard severity zone did not play a large determining factor in whether a structure was damaged or destroyed, the date of construction did play a large role. In 2017, 33,508 structures that were constructed prior to 2009 were damaged in wildfires. In the same year, only 592 structures that were built after 2009 were damaged or destroyed by wildfire. The year 2009 is significant as it was the first full year that structures build in Wildland-Urban Interface areas were required to comply with California Building Code, Chapter 7A requirements. This data indicates that the requirements proposed in 504 which mirror the California 7A requirements are working.

Construction Costs for a Wildfire Resistant Home, California Edition (headwaterseconomics.org)

The Headwaters Economics study by the Insurance Institute for Business & Home Safety outlines that California's Chapter 7A requirements are a minimum. If there is a proposal for three construction versions, using the proposed code provisions as the minimum with an enhanced version and an optimum version for best performance standards. "In preliminary research conducted by Baylis and Boom hower (2021), the authors examined home survivability factors for nearly 50,000 homes exposed to wildfires between 2007 and 2020 across California.30 The authors reported that a home built in 2010 or later was nearly 40% less likely to be destroyed by a wildfire compared to a home built in 1985 or before. Home survivability was closely correlated to modern building codes requiring homeowner mitigation measures. Additionally, a home was more likely to survive if its nearest neighbor also complied with recent mitigation regulations resulting in a positive net spillover effect for the larger neighborhood.

Roof

Roofs are highly vulnerable to ignition due to their relatively large horizontal surface area. The exposure of roof coverings to a range of climatic conditions, including wind, rain, and sun, means the roof covering will require maintenance and eventual replacement. Many Class A fire-rated roof covering options are available (e.g., asphalt fiberglass composition shingles). A main reason the roof is vulnerable is because the roof edge—including gutters and roof-to-wall intersections where roof covering meets other materials (e.g., siding used in dormers and split-level homes)—is exposed to ember ignitions. These areas must be properly protected by adding additional flashing t roof-to-wall locations.

Under-Eave Area

Research suggests eaves are extremely important in structure survivability.1 Eaves play an important role for building design but they also create vulnerabilities and pathways for the building to ignite. Embers can travel through vents in the eave into the attic and accumulate in gaps between blocking and rafters in open-eave construction. Should flames reach the under-eave area, open eaves can also trap heat. Once there is an ignition in the under-eave area, fire will spread laterally more quickly.

Vents in the under-eave area are inlet vents and therefore allow air to enter the attic space. During a wildfire, vent openings can allow the entry of wind-blown embers into the interior attic space. If combustible materials in the attic ignite, the house can burn from the inside out.2 The importance of ember and flame entry through vents during a wildfire, and as per requirements in Chapter 7A, have resulted in the development of vents designed to resist the intrusion of flames and embers.

Exterior Wall

Exterior walls and components in the wall assembly can be vulnerable if exposed to embers, flames, or prolonged exposure to radiant heat from burning items located close to the home. These exposures can ignite combustible siding and the resulting flames can spread vertically and laterally to other wall components such as windows and the under-eave area. Siding extending close to the ground can be vulnerable to ignition by embers accumulating at the base of the wall that ignite it or components in the wall assembly (e.g., wood sheathing).

Attached Deck

Similar to a roof, a deck can cover a large horizontal surface area and can be vulnerable to embers and under-deck flame impingement exposures. A burning deck can expose the side of the house to extended radiant heat and/or direct flame contact. The deck walking surface and structural support members, as well as what is stored on or below the deck are therefore important considerations.

Most commonly used deck board products (including wood and plastic composite boards) are combustible. Decks with noncombustible walking surfaces include lightweight concrete or a flagstone product. Regardless of the walking surface, decks are typically supported by solid wood joists, beams, and columns that will be vulnerable to ignition if nearby combustible materials ignite. Enclosing the under-deck area vertically around the perimeter can minimize the accumulation of vegetative debris, vegetation, and other combustible materials. For enclosed decks, installing vents to ensure that excessive moisture does not accumulate in the under-deck area is critical to avoid moisture-related degradation.

Glazing Window manufacturers and suppliers indicated that whereas Chapter 7A only requires one pane in a dual-paned window to be tempered, many window manufacturers only supply windows with both panes tempered. Other manufacturers will supply what the customer requests but will default to one-pane tempered. Since all comparative versions of the wildfire-resistant home are Chapter 7A-compliant, the price of windows would not result in a net cost difference.

Doors

Doors (including window glass set in doors) and door frames can fail for the same reasons as windows. Embers can accumulate in the small gaps between the door and frame, resulting in ignition of the door-framing and weather-sealing material. Vents: Flame- and ember-resistant vents, approved and listed by the OSFM Building Materials Listing Program, will be required for all attic and crawlspace vents. Separation Distance from accessory structures NIST Technical note 2205 explains how the mitigation of accessory structures help in hardening a building in the wildland area.

https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2205.pdf

Bibliography: https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.2135.pdf
https://headwaterseconomics.org/natural-hazards/wildfire-resistant-costs-california/

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

Construction costs for a typical single-family (1,750 square-foot) home would increase approximately $2,000 including developer overhead costs.

Estimated Immediate Cost Impact Justification (methodology and variables):

In 2004, and as a precursor to California adopting Building Code Chapter 7A, the Office of the State Fire Marshal requested an analysis identifying the costs and benefits associated with proposed regulations in the state's wildfire-prone areas. The study was conducted by Fire Cause Analysis and evaluated economic and construction data within various business sectors to analyze construction costs if proposed regulations were implemented.33 The study found construction costs for a typical single-family (1,750 square-foot) home

would increase approximately $2,000 including developer overhead costs. As an aggregated total at the state level, construction costs would increase approximately $30 million per year for the estimated 14,000 new homes built in areas where regulations would apply. The authors concluded the costs of not implementing regulations, in the form of property losses and suppression costs, exceeded the projected costs for regulations and therefore recommended adopting mitigation standards in wildfire-prone areas.

In 2019, the National Institute of Building Sciences (NIBS) released a report identifying the benefit-cost ratio (BCR) of investing in hazard mitigation, including wildfires.35 The authors found that for every $1 spent on up-front costs for wildfire mitigation, a benefit of $4 was received.

In 2021, the National Research Council of Canada released a study analyzing the benefit-cost ratio for building new construction to comply with the country's wildland urban interface (WUI) Guide.38 In its examination, approximately $12,000 CAD (~$9,500 USD) was added to the overall costs for a new, 2,000-square-foot home to meet the provision of Canada's National WUI Guide. The comprehensive report also examined costs for retrofitting existing structures, as well as transferred costs at the community and national scale. Similar to the NIBS study in 2019, the NRC report found an up-front investment in wildfire-resistant construction and vegetation management yielded benefits that exceeded long-term costs and losses.

WUIC55-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The concern about the use of the code in states other than California and the negative impact of limiting the construction options in these locations with different types and levels of hazard. The desire to have more data to reinforce the deletions. The preference is to make smaller incremental changes instead of larger wholesale changes for the locations that are a little slower in adopting the code. (Vote: 11-2)

WUIC55-24

Individual Consideration Agenda

Comment 1:

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov) requests As Submitted

Reason: same as original proposal

Bibliography: same as orininal propoasl

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Comment (CAH2)# 804

Comment 2:

Proponents: Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org) requests As Submitted

Reason: This code change is to propose one construction method for building and structures in the wildland area. This is the companion to another proposal to delete sections 505 and 506 with the intent to remove Ignition Resistant Construction Classes II and III. Replacing these classifications will be a single defined Ignition Resistant Construction as provided by Section 504 of this code. As the IWUIC is intended to provide a minimum standard of protection for the Wildland-Urban Interface areas, a single classification of Ignition Resistant Construction should be provided to accomplish the following goals:

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https://headwaterseconomics.org/natural-hazards/wildfire-resistant-costs-california/

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Comment (CAH2)# 775

WUIC60-24

IWUIC: SECTION 603, 603.1, 603.2, TABLE 603.2, FIGURE 603.2, 603.2.1, 603.2.2, 603.2.3, 603.1 (New), 603.2 (New), 603.3 (New), 603.3.1 (New), 603.4 (New), 603.4.1 (New), 603.4.2 (New), 603.4.2.1 (New)

Proposed Change as Submitted

Proponents: Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov); Darcy Davidson, Carlsbad Fire Department, California Fire Prevention Officers (darcy.davidson@carlsbadca.gov)

2024 International Wildland Urban Interface Code

Revise as follows:

SECTION 603
~~DEFENSIBLE SPACE~~ VEGETATION PLAN

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

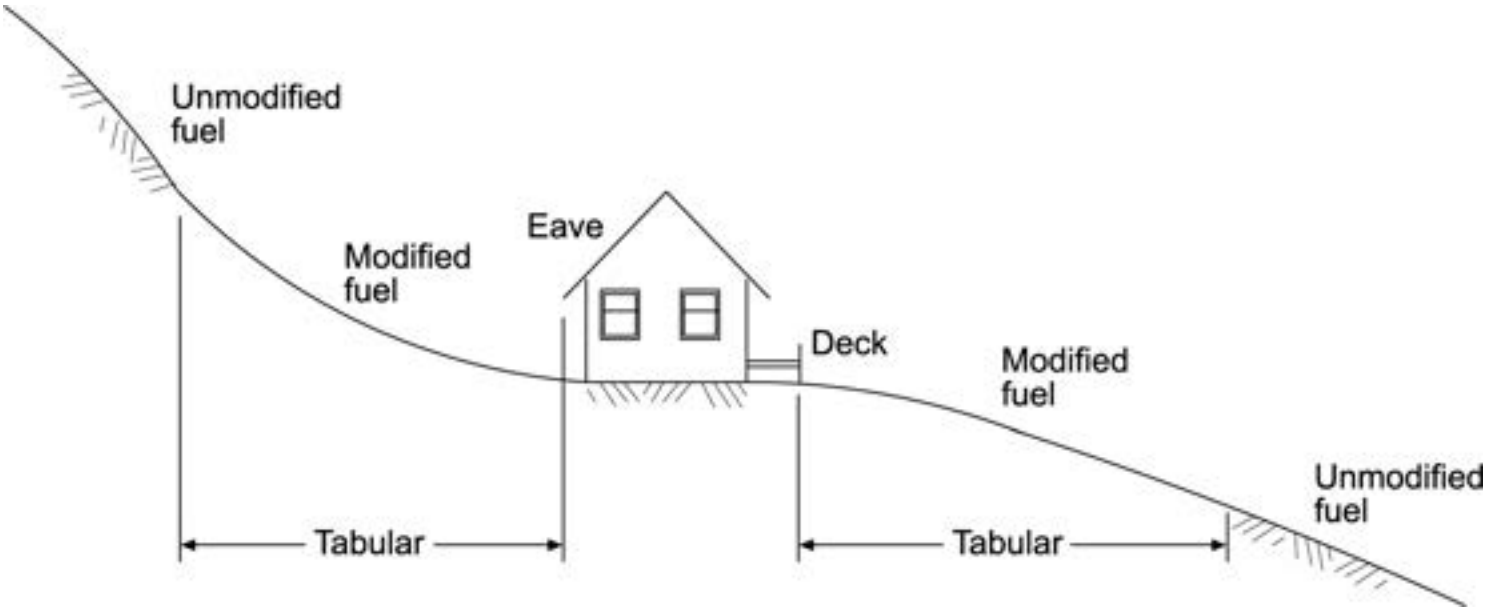
~~603.2~~ ~~Fuel modification.~~ ~~Buildings or structures, constructed in compliance with the conforming *defensible space* category of Table 503.1, shall comply with the *fuel modification* distances contained in Table 603.2. For all other purposes the *fuel modification* distance shall be not less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

~~TABLE 603.2 REQUIRED DEFENSIBLE SPACE~~

~~WILDLAND-URBAN INTERFACE AREA~~	~~FUEL MODIFICATION DISTANCE (feet)[a]~~
~~Moderate hazard~~	~~30~~
~~High hazard~~	~~50~~
~~Extreme hazard~~	~~100~~

~~For SI: 1 foot = 304.8 mm.~~

~~a. Distances are allowed to be increased due to site-specific analysis based on local conditions and the *fire protection plan*.~~



~~**FIGURE 603.2 MEASUREMENTS OF FUEL MODIFICATION DISTANCE**~~

~~**603.2.1 Responsible party.** Persons owning, leasing, controlling, operating or maintaining buildings or structures requiring *defensible spaces* are responsible for modifying or removing nonfire-resistive vegetation on the property owned, leased or controlled by said person.~~

~~**603.2.2 Trees.** Trees are allowed within the *defensible space*, provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures, overhead electrical facilities or unmodified fuel is not less than 10 feet (3048 mm).~~

~~**603.2.3 Ground cover.** Deadwood and litter shall be regularly removed from trees. Where ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants are used as ground cover, they are allowed to be within the designated *defensible space*, provided that they do not form a means of transmitting fire from the native growth to any structure.~~

Add new text as follows:

603.1 General. Planting of vegetation for new landscaping shall be selected to reduce vegetation in proximity to a structure and to maintain vegetation as it matures.

603.2 Application. All new plantings of vegetation in designated Wildland-Urban Interface areas shall comply with Sections 603.3 through 603.4.2.1.

603.3 Landscape plans. Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.

603.3.1 Contents. In addition to the construction site plan as outlined in the *International Building Code* landscape plans shall contain the following:

1. Delineation of the 30-foot (9144 mm) and 100-foot (3048 mm) fuel management zones from all structures.

2. Identification of existing vegetation to remain and proposed new vegetation.

3. Identification of irrigated areas.

4. A plant legend with both botanical and common names, and identification of all plant material symbols.

5. Identification of ground coverings within the 30-foot (9144 mm) zone.

603.4 Vegetation. All new vegetation shall be fire-smart vegetation in accordance with this section. **Exception:** Trees classified as fire-smart vegetation complying with Section 603.4.2.1. To be considered fire-smart vegetation, it must meet at least one of the following:

1. Be identified as fire-smart vegetation in an approved book, journal or listing from an approved organization.

2. Be identified as fire-smart vegetation by a licensed landscape architect with supporting justification.

3. Plants considered fire-smart vegetation and approved by the local enforcing agency.

603.4.1 Shrubs. All new plantings of shrubs shall comply with the following:

1. Shrubs shall not exceed 6 feet (1829 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 a minimum of 15 feet (4572 mm).

4. Shrub groupings shall be separated from structures a minimum of 30 feet (9144 mm).

5. Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet (3048 mm), whichever is greater.

603.4.2 Trees. Trees shall be managed as follows within the 30-foot zone (9144 mm) of a structure:

1. New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure.

2. The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet (3048 mm).

3. Existing trees shall be trimmed to provide a minimum separation of 10 feet (3048 mm)away from chimney and stovepipe outlets

603.4.2.1 Non-fire-smart vegetation. New trees not classified as fire-smart vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum of 30 feet from any combustible structure. **Exception:** New, single specimen trees, planted so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure and are well pruned and maintained to not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation or to interrupt the advance of embers toward a structure.

Reason: The proposal to relocate section "Defensible Space" to follow the newly created section titled "Vegetation Plan" focuses on the planting of vegetation for new landscaping and to maintain defensible space for structures within the wildland urban interface areas. Chapter 5 of the Wildland Urban Interface Code requires vegetation management compliance prior to the final approval for building permits issued, this new section will give guidance on how to comply with the vegetation plan compliance when new landscaping is planted in these areas.

This section will apply only to new plantings of vegetation (other than a brief mention of existing trees in section 603.4.2) only in the Wildland Urban Interface area. Existing vegetation management is addressed in the Defensible Space section.

Requirements for landscape plans are laid out in this section. Since many local fire departments manage the Vegetation Plan Compliance requirements through submittals of landscape plans, there is a need for language to spell out the minimum requirements. This section provides these requirements to ensure adequate information is provided on the plans to conduct a plan review. Defensible space and Vegetation Management go hand in hand. Defensible space is based on the location of the structures in relation to the property lines as well as manmade and natural fire breaks. These topographic features are an essential factor in determining the risks of wildfire spread.

It also addresses how to select fire smart vegetation and provide basic information on planting to ensure that as the plantings grow to maturity, they can be maintained per the section for the Defensible Space requirements. Specifically addressed are shrubs and trees. The intention for shrubs is to select fire-smart species and to purposefully plant them in groupings and arrangements that ensure they create a landscape that can be easily maintained as they grow. Similarly with shrubs, new tree plantings must also be carefully considered. Trees have the added ability to create a pathway that will lead a fire up to the most vulnerable portions of a house (eaves, vents, and roofs), but also considered was the understanding that trees can provide much needed shade and can prevent the "urban heat island" effect.

The existing tree requirements that are briefly mentioned in this section because it will be very likely existing trees will be part of a new landscape plan as property owners landscape their yards.

Unique to the trees section are the requirements for non-fire-smart vegetation. Since so many of the popular varies of trees may not qualify for fire-smart status, requirements for non-fire-smart vegetation are also found in the trees section. The requirement for non-fire-smart vegetation is to simply plant them further away from structures to mitigate the additional hazard these trees may bring. This subsection allows property owners to have a path of compliance when they have a robust maintenance plan in place. The exception allows for small lots to have some kind of landscaping closer to the structure. The spacing an maintenance are the most important factors. Tree species become secondary when the spacing and maintenance are in compliance.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

$0 or it may increase of the cost of construction dependent upon the landscaping material and vegetation selected to comply with this section.

Estimated Immediate Cost Impact Justification (methodology and variables):

It is a property owners design choices that will determine the cost of landscaping. With many variables of cost per region and area will be driven by the local contractor, supply and demand.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Agreement that the requirements might be more appropriately located in an appendix. There was a request from the committee to see some more information and reasoning with regards to some of the prescriptive requirement such as the spacing. The need for language cleanup that could be done throughout the proposal that was brought up in the testimony. The cost impact statement was questioned and that there is a need for more information. The intent is going in the right direction, but there is a need to see a little bit more correlation with the vegetation management plan and the fire protection plan. (Vote: 12-1)

WUIC60-24

Individual Consideration Agenda

Comment 1:

IWUIC: SECTION 603, 603.1, 603.2, 603.2.1, 603.2.2, 603.2.3, FIGURE 603.2, TABLE 603.2, 603.3, 603.3.1, 603.4, 603.4.1, 603.4.2, 603.4.2.1

Proponents: Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Crystal Sujeski, CALFIRE/Office of the State Fire Marshal, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

SECTION 603
DEFENSIBLE SPACE

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

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

603.2.1 Responsible party. Persons owning, leasing, controlling, operating or maintaining buildings or structures requiring *defensible spaces* are responsible for modifying or removing nonfire-resistive vegetation on the property owned, leased or controlled by said person.

603.2.2 Trees. Trees are allowed within the *defensible space*, provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures, overhead electrical facilities or unmodified fuel is not less than 10 feet (3048 mm).

603.2.3 Ground cover. Deadwood and litter shall be regularly removed from trees. Where ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants are used as ground cover, they are allowed to be within the designated *defensible space*, provided that they do not form a means of transmitting fire from the native growth to any structure.

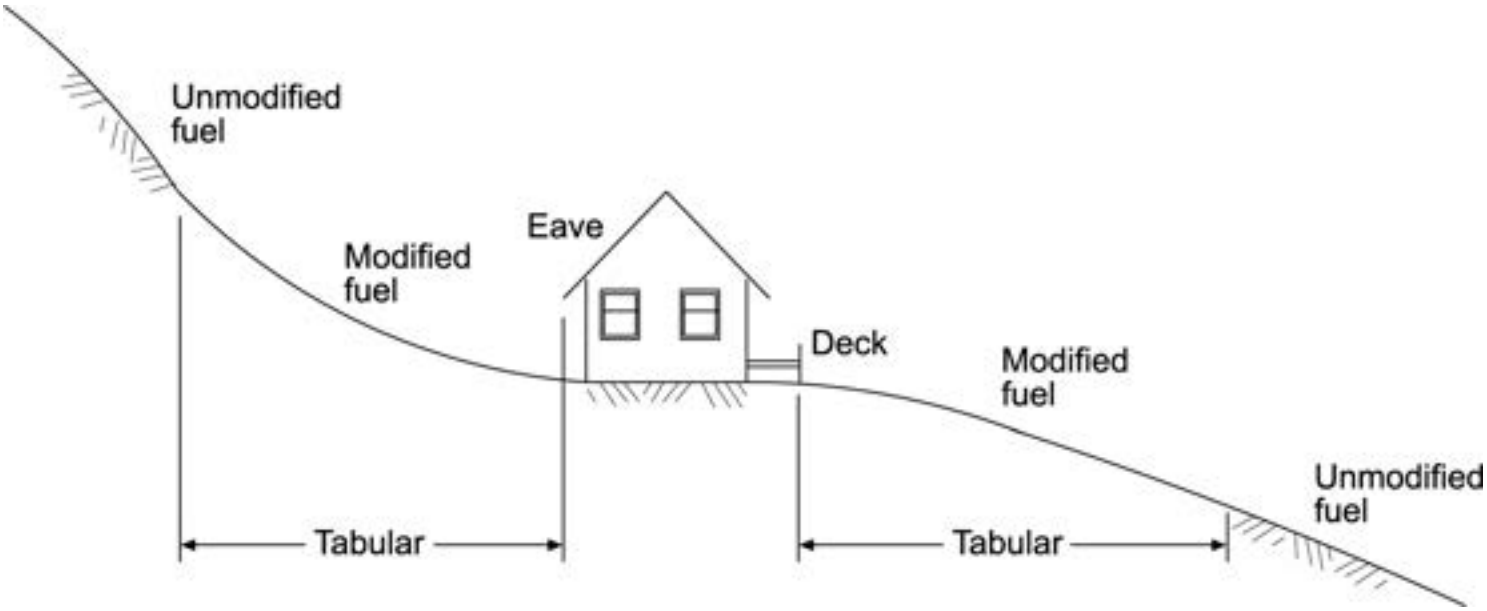


FIGURE 603.2 MEASUREMENTS OF FUEL MODIFICATION DISTANCE

TABLE 603.2 REQUIRED DEFENSIBLE SPACE

WILDLAND-URBAN INTERFACE AREA	FUEL MODIFICATION DISTANCE (feet)[a]
Moderate hazard	30
High hazard	50
Extreme hazard	100

For SI: 1 foot = 304.8 mm.

a. Distances are allowed to be increased due to site-specific analysis based on local conditions and the *fire protection plan*.

Revise as follows:

SECTION ~~603~~ 604
VEGETATION PLAN

~~**603.1**~~ **604.1 General.** Planting of vegetation for new landscaping shall be selected to reduce vegetation in proximity to a structure and to maintain vegetation as it matures.

~~**603.2**~~ **604.2 Application.** All new plantings of vegetation in designated Wildland-Urban Interface areas shall comply with Sections 604.3 through 604.4.2.1.

~~**603.3**~~ **604.3 Landscape plans.** Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.

~~**603.3.1**~~ **604.3.1 Contents.** In addition to the construction site plan as outlined in the *International Building Code* landscape plans shall contain the following:

1. Delineation of the 30-foot (9144 mm) and 100-foot (3048 mm) fuel management zones from all structures.

2. Identification of existing vegetation to remain and proposed new vegetation.

3. Identification of irrigated areas.

4. A plant legend with both botanical and common names, and identification of all plant material symbols.

5. Identification of ground coverings within the 30-foot (9144 mm) zone.

~~603.4~~ 604.4 **Vegetation.** All new vegetation shall be fire-smart vegetation in accordance with this section.

Exception: Trees classified as non-fire-smart vegetation complying with Section 604.4.2.1.

To be considered fire-smart vegetation, it must meet at least one of the following:

1. Be identified as fire-smart vegetation in an approved book, journal or listing from an approved organization.

2. Be identified as fire-smart vegetation by a licensed ~~landscape architect~~ professional with supporting justification.

3. Plants considered fire-smart vegetation and approved by the local enforcing agency.

~~603.4.1~~ 604.4.1 **Shrubs.** All new plantings of shrubs shall comply with the following:

1. Shrubs shall not exceed 6 feet (1829 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 a minimum of 15 feet (4572 mm).

4. Shrub groupings shall be separated from structures a minimum of 30 feet (9144 mm).

5. Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet (3048 mm), whichever is greater.

~~603.4.2~~ 604.4.2 **Trees.** Trees shall be managed as follows within the 30-foot zone (9144 mm) of a structure:

1. New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure.

2. The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet (3048 mm).

3. Existing trees shall be trimmed to provide a minimum separation of 10 feet (3048 mm)away from chimney and stovepipe outlets

~~603.4.2.1~~ 604.4.2.1 **Non-fire-smart vegetation.** New trees not classified as fire-smart vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum of 30 feet from any combustible structure.

Exception: New, single specimen trees, planted so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure and are well pruned and maintained to not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation or to interrupt the advance of embers toward a structure.

Reason: The intent of this comment is to restore Section 603 "Defensible Space". It was not the intent of the original proposal WUI60-24 to eliminate Defensible Space from the code. This comment includes the movement of the proposed "Vegetation Plan" to its own Section following directly after Section 603 "Defensible Space".

Based upon the comments of the committee during the first hearing, Section 604.4 has been modified to reflect the following changes.

The exception with 604.4 now reads "non-fire smart vegetation" to better coordinate the exception with Section 604.4.2.1. The subject of Section 604.4.2.1 is "non-fire smart vegetation" which was not reflected in the text of the original proposal.

In item 2 of Section 604.4, the term "licensed landscape architect" has been changed to "licensed professional". This modification was made to address a concern by the committee that the original language may have only been applicable in certain regions. The change is also reflective of a floor modification that was made during the first committee hearing.

Cost Impact: Increase

Estimated Immediate Cost Impact:

$0 or it may increase the cost of construction dependent upon the landscaping material and vegetation selected to comply with the section.

Estimated Immediate Cost Impact Justification (methodology and variables):

It is a property owner design choices that will determine the cost of landscaping. With many variables of cost per region and area will be driven by the local contractor, supply and demand. Requirements existing within the code, (2024 IWUIC Section 604.2), already require the removal of non-fire smart vegetation within the modified defensible space.

Comment (CAH2)# 344

WUIC70-24

IWUIC: [A] 102.8, CHAPTER 7 (New), SECTION 701 (New), 701.1 (New), SECTION 702 (New), 702.1 (New), SECTION 703 (New), 703.1 (New), SECTION 704 (New), 704.1 (New), 704.2 (New), 704.3 (New), SECTION 705 (New), 705.1 (New), SECTION 706 (New), 404.9, 706.2 (New), SECTION 707 (New), 604.1, 707.1.1 (New), 604.2, 604.3, 604.4, 604.4.1, 604.4.2, 603.2.1, 707.5 (New), 707.6 (New), 707.7 (New), 603.2.3

Proposed Change as Submitted

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org)

2024 International Wildland Urban Interface Code

Revise as follows:

[A] 102.8 Existing conditions. The legal occupancy or use of any structure ~~or condition~~ existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically ~~covered~~ provided for in this code, the International Fire Code or the *International Property Maintenance Code*, or as is deemed necessary by the *code official* for the general safety and welfare of the occupants and the public. Existing properties shall comply with the defensible space requirements in Section 603 and Chapter 7.

Add new text as follows:

CHAPTER 7
MAINTENANCE REQUIREMENTS

SECTION 701
GENERAL

701.1 Scope. Where a building or structure was constructed in accordance with this code or was previously *approved*,maintenance of new and existing buildings, structures, systems and premises shall comply with this chapter. The construction requirements of this chapter are not intended to apply retroactively.

SECTION 702
IGNITION-RESISTANT CONSTRUCTION

702.1 General. Ignition-resistant construction features found to be damaged, missing or non-compliant shall be repaired or replaced.

SECTION 703
FIRE PROTECTION AND LIFE SAFETY SYSTEMS

703.1 General. *Fire protection* and *life safety system*s shall be maintained operable at all times in accordance with the applicable standard

SECTION 704
FIRE ACCESS ROADS

704.1 Obstructions. Fire access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 403.3 shall be maintained at all times.

704.2 Maintenance. Fire access roadsshall be maintained in a condition equal to or better than the condition at the time of approval.

704.3 Signs and marking. Road identification signs required in Section 403.4.1 and marking of fire protection equipment required in Section 403.5 shall be maintained and legible.

SECTION 705
PREMISES IDENTIFICATION

705.1 General. Signs and markings for premise identification required in Section 403.6 shall be maintained and legible.

SECTION 706
WATER SUPPLY

Revise as follows:

~~**404.9**~~**706.1 ~~Testing and maintenance~~General.** Water sources, draft sites, and hydrants ~~and other fire protection equipment~~ required by this code shall be subject to periodic tests as required by the *code official*. ~~Such equipment installed under the provisions of this code shall be maintained in an operative condition at all times and shall be repaired or replaced where defective. Additions, repairs, alterations and servicing of such fire protection equipment and resources shall be in accordance with *approved* standards.~~

Add new text as follows:

706.2 Maintenance. Water sources, draft sites and hydrants shall be maintained in an operative condition at all times.

SECTION 707
DEFENSIBLE SPACE AND VEGETATION MANAGEMENT

Revise as follows:

~~**604.1**~~ **707.1 General.** *Defensible spaces* required by Section 603 or by an *approved* vegetation management plan in accordance with 502.2 shall be maintained at all times in accordance with 706.2 through 706.4.2 ~~Section 604~~.

Add new text as follows:

707.1.1 Fire protection plans. Where an *approved fire protection plan* contains *defensible space* requirements other than those in Table 603.2, the *defensible space* requirements in the *approved fire protection plan* shall be maintained at all times.

Revise as follows:

~~**604.2**~~ **707.2 Modified area.** Nonfire-resistive vegetation or growth shall be kept clear of buildings or structures, in accordance with Section 603, in such a manner as to provide a clear area for fire suppression operations.

~~**604.3**~~ **707.3 Responsibility.** Persons owning, leasing, controlling, operating or maintaining buildings or structures are responsible for maintenance of *defensible spaces*. Maintenance of the *defensible space* shall include modifying or removing nonfire-resistive vegetation and keeping leaves, needles and other dead vegetative material regularly removed from roofs of buildings and structures.

~~**604.4**~~ **707.4 Trees.** Tree crowns extending to within 10 feet (3048 mm) of any structure shall be pruned to maintain a minimum horizontal clearance of 10 feet (3048 mm). Tree crowns within the *defensible space* shall be pruned to remove limbs located less than 6 feet (1829 mm) above the ground surface ~~adjacent to the trees~~.

~~604.4.1~~ 707.4.1 **Chimney clearance.** Portions of tree crowns that extend to within 10 feet (3048 mm) of the outlet of a chimney shall be pruned to maintain a minimum horizontal clearance of 10 feet (3048 mm).

~~604.4.2~~ 707.4.2 **Deadwood removed.** Deadwood and ~~litter~~ dying branches shall be regularly removed from trees.

Delete without substitution:

~~603.2.1 **Responsible party**. Persons owning, leasing, controlling, operating or maintaining buildings or structures requiring *defensible spaces* are responsible for modifying or removing nonfire-resistive vegetation on the property owned, leased or controlled by said person.~~

Add new text as follows:

707.5 Accumulation of dead vegetation. Leaves, needles, or other vegetation on roofs, in gutters, on or below decks, porches, balconies or exterior stairways shall be regularly removed.

707.6 Woodpiles. A minimum of 10 feet (3048 mm) clearance to combustible materials shall be maintained in all directions around all exposed woodpiles. **Exception:** Where an approved vegetation management plan requires a different clearance distance.

707.7 Liquid Propane Gas (LPG) storage tanks. A minimum of 10 feet clearance to combustible materials shall be maintained in all directions around aboveground Liquid Propane Gas (LPG) storage tanks. **Exception:** Where an *approved* vegetation management plan requires a different clearance distance.

Revise as follows:

~~603.2.3~~707.8 **Ground cover.** ~~Deadwood and litter shall be regularly removed from trees. Where~~ ~~o~~Ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants ~~are~~ used as ground cover, ~~they are allowed~~ shall be permitted to be within the designated *defensible space*, provided that they do not form a means of transmitting fire from the native growth to any structure.

Reason: This proposal accomplishes 3 things:

1. It creates a new Chapter for all maintenance requirements applicable to fire hazard mitigation of structures and premises regulated by the IWUIC. New construction requirements remain in Chapters 4, 5 and 6.

2. It relocates all existing requirements that are maintenance related from Chapter 6 into the appropriate sections of this new Chapter for clarity and easier use of this code.

3. It adds reasonable new requirements for maintenance or repair or replacement of features that were identified by F-CAC as gaps that needed to be addressed.

FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Estimated Immediate Cost Impact:

$0 for new construction. This proposal does not impose any new or additional cost to initial construction. However, there are new requirements for the maintenance and/or repair of wildfire mitigation measures that are already required for new construction. Maintenance and repair costs are variable and specific cost estimates could vary significantly over the lifespan of a building or property.

Estimated Immediate Cost Impact Justification (methodology and variables):

This proposal will impose additional costs related to ongoing maintenance, repair or replacement of features that were required for initial construction and site approval but do not increase the cost of initial construction.

Estimated Life Cycle Cost Impact:

Maintenance and repair costs are variable and specific cost estimates could vary significantly over the lifespan of a building or property. Costs may necessitate purchase of replacement materials, labor (which could by DIY) and increase as time goes by.

WUIC70-24

Public Hearing Results (CAH1)

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: It was noted by the committee that it is not the intent of the existing conditions requirements in Section 102.8 for all existing properties to comply with the proposed new conditions, whether they were subject to this code or not when they were originally built. There are a few other sections like ground cover that could be better aligned with the other requirements that have already been approved in other proposals. (Vote: 10-3)

WUIC70-24

Individual Consideration Agenda

Comment 1:

IWUIC: [A] 102.8, CHAPTER 7, SECTION 701, 701.1

Proponents: Robert Marshall, FCAC, FCAC (fcac@iccsafe.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

[A] 102.8 Existing conditions. The legal occupancy or use of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically provided for in this code, the International Fire Code or the *International Property Maintenance Code*, or as is deemed necessary by the *code official* for the general safety and welfare of the occupants and the public. ~~Existing properties shall comply with the defensible space requirements in Section 603 and Chapter 7.~~

CHAPTER 7
MAINTENANCE REQUIREMENTS

SECTION 701

GENERAL

701.1 Scope. Where a building or structure was constructed in accordance with this code or was previously *approved*, maintenance of ~~new and existing~~ buildings, structures, systems and premises in accordance with this code shall comply with this chapter. The construction requirements of this chapter are not intended to apply retroactively.

Reason: At the request of the committee, two modifications to the original proposal were made to make it more clear that these are maintenance provisions for buildings already constructed under this code. The remainder of the proposal does not change from the original.

FCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2023 and early 2024 the FCAC has held several virtual meetings and one in-person meeting open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the **FCAC Website**.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal merely relocates all existing maintenance language. There are no core changes to any provision, and therefore no cost impact.

Comment (CAH2)# 320

WUIC71-24

IWUIC: APPENDIX C, SECTION C101, C101.1, TABLE C101.1, SECTION C101 (New),

C101.1
(New), C101.2 (New), C101.3 (New), C101.4 (New), C101.5 (New), C101.6 (New), C101.7 (New), C101.8 (New), TABLE C101.1 (New)

Proposed Change as Submitted

Proponents: Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov); Darcy Davidson, Carlsbad Fire Department, California Fire Prevention Officers (darcy.davidson@carlsbadca.gov)

2024 International Wildland Urban Interface Code

Revise as follows:

APPENDIX C
~~FIRE HAZARD SEVERITY FORM~~ COMMUNITY WILDLAND-URBAN INTERFACE (WUI) FIRE HAZARD EVALUATION FRAMEWORK

SECTION ~~C101~~
~~FIRE HAZARD SEVERITY FORM~~

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

~~**TABLE C101.1 FIRE HAZARD SEVERITY FORM**~~

~~**A. Subdivision Design Points**~~	
~~1. Ingress/Egress~~	
~~Two or more primary roads~~	~~1~~ ___
~~One road~~	~~3~~ ___
~~One-way road in, one-way road out~~	~~5~~ ___
~~2. Width of Primary Road~~	
~~20 feet (6096 mm) or more~~	~~1~~ ___
~~Less than 20 feet (6096 mm)~~	~~3~~ ___
~~3. Accessibility~~	
~~Road grade 5% or less~~	~~1~~ ___
~~Road grade more than 5%~~	~~3~~ ___
~~4. Secondary Road Terminus~~	
~~Loop roads, cul-de-sacs with an outside turning radius of 45 feet (13 716 mm) or greater~~	~~1~~ ___
~~Cul-de-sac turnaround~~	~~2~~ ___
~~Dead-end roads 200 feet (60 960 mm) or less in length~~	~~3~~ ___

~~Dead-end roads greater than 200 feet (60 960 mm) in length~~ ~~5~~

~~5. Street Signs~~

~~Present~~ ~~1~~

~~Not present~~ ~~3~~

~~B. Vegetation (IWUIC Definitions)~~

~~1. Fuel Types~~

~~Light~~ ~~1~~

~~Medium~~ ~~5~~

~~Heavy~~ ~~10~~

~~2. Defensible Space~~

~~70% or more of site~~ ~~1~~

~~30% or more, but less than 70% of site~~ ~~10~~

~~Less than 30% of site~~ ~~20~~

~~C. Topography~~

~~8% or less~~ ~~1~~

~~More than 8%, but less than 20%~~ ~~4~~

~~20% or more, but less than 30%~~ ~~7~~

~~30% or more~~ ~~10~~

~~D. Roofing Material~~

~~Class A Fire Rated~~ ~~1~~

~~Class B Fire Rated~~ ~~5~~

~~Class C Fire Rated~~ ~~10~~

~~Nonrated~~ ~~20~~

~~E. Fire Protection—Water Source~~

~~500 GPM (1892.5 L/min) hydrant within 1,000 feet (304.8 m)~~ ~~1~~

~~Hydrant farther than 1,000 feet (304.8 m) or draft site~~ ~~2~~

~~Water source 20 min. or less, round trip~~ ~~5~~

~~Water source farther than 20 min., and 45 min. or less, round trip~~ ~~7~~

~~Water source farther than 45 min., round trip~~ ~~10~~

~~F. Existing Building Construction Materials~~

~~Noncombustible siding/deck~~ ~~1~~

~~Noncombustible siding/combustible deck~~ ~~5~~

~~Combustible siding and deck~~ ~~10~~

~~G. Utilities (gas and/or electric)~~

~~All underground utilities~~	~~1~~
~~One underground, one above ground~~	~~3~~
~~All above ground~~	~~5~~

~~Total for Subdivision~~

~~Moderate Hazard~~	~~40–59~~
~~High Hazard~~	~~60–74~~
~~Extreme Hazard~~	~~75+~~

Add new text as follows:

SECTION C101
COMMUNITY WUI FIRE HAZARD EVALUATION FRAMEWORK

C101.1

Definitions. The Community WUI Hazard Evaluation Framework presented here is intended for communities as small as a few hundred to tens of thousands of residents. The methodology is not intended for the documentation of single residences or large cities. It is intended to provide a community with an overview of the overall WUI fire-related hazards and to enable the code official to compare the relative hazards and preparedness levels of different communities. The information collected can be used by first responders and community and county officials to prioritize hazard mitigation within and around the community and to develop "tabletop" responses to different WUI fire scenarios. In the event of an actual WUI fire, the information collected could be used by first responders and local officials to safely evacuate civilians, to reduce the risk of first responder injuries and to enhance fire containment. The following are definitions and uses of the different components of Table C101.1 Community WUI Fire Hazard Evaluation Framework. This framework may be expanded to include additional characteristics that are not specifically listed in this preliminary version.

C101.2 Community. In the sense of WUI fire hazard, the community should be viewed in the context of evacuation arteries rather than jurisdictional boundaries. As such, the community may have parts that are incorporated or unincorporated. Community size is reported in acres, and the community boundary selected for this hazard evaluation can be provided for use in a geographic information system (GIS) layer in a number of formats, including but not limited to shapefile, geodatabase or Geo-Package. A topographic overview of the area (community) is used to describe the general conditions using one or more of the following key words: flat terrain, rolling hills, moderate slopes, valleys, steep slopes and/or plateau.

Information about prevailing weather patterns, such as localized winds or significant wind events (strength and direction), should also be included in the community profile.

C101.3 Fuels. The fuels section is intended to provide an overview of the structural, vegetative and other fuels present in the community. This is not a parcel-level assessment; however, if defensible space assessment data is available, it can be aggregated and utilized within this framework to provide higher resolution assessment of community fire hazard. Structure density is a simple metric to capture structure-to-structure spacing and provide insight on the potential structure-to-structure fire spread. For uniform communities, a representative structure separation distance (SSD) may be sufficient, whereas nonuniform communities will be better described using a histogram of SSD. The age of structures may also be a factor in structure vulnerability due to changes in building codes associated with structure hardening. Similarly, a community that was built over a short period of time can be represented by a single value representing the decade of construction, while a community that grew and expanded over long periods will be better represented by a histogram of structure ages.

A database such as LANDFIRE (www.landfire.gov/) can provide the vegetative fuel type and fuel loading throughout the community. This data will be limited by the age of the last LANDFIRE overflight and the 100 feet (30 meters) pixel spatial resolution.

Natural and artificial fuel breaks, including fuel treatments within and around the community, should be represented in a geospatial format and should include the year the vegetative fuel treatment was conducted. Fuel treatments should also include any logging activities in the area surrounding the community. Fire history in and around the community will describe the last time the community

experienced direct impacts from fire. Shapefiles of the fuel treatments and fire history will allow for spatial documentation of this data. Fuel treatments and fire history should be documented at least 10 miles (16 km) out from the edge of the community. Local conditions (e.g., fuel, topography, weather, evacuation routes) may require documentation well beyond 10 miles (16 km). The last large fire in the area of the community perimeter, together with the vegetative fuel loading, will provide information on the potential energy content of the vegetative fuels in the event of a short- or long-term drought.

The documentation of other community hazards, such as hazmat or high fuel load facilities (e.g., fixed propane tanks, hazardous material storage and use facilities, ammunition facilities lumber yards, pallet storage, tire storage), is important as they can affect civilians and first responder safety during evacuations, fire containment and mop-up activities. The information should be provided in the form of a GIS layer and may then be used by first responders to develop "tabletop" responses for emergency preparedness, and to direct response actions during a WUI fire event.

C101.4 Population. The population of the selected community will impact, among other factors, the minimum time required for evacuation. Population and population density, expressed as the number of residents per acre, are both important metrics that provide information that can be used for evacuation assessment. The permanent to transient population density ratio is intended to capture the fraction of the community that may be visiting for tourism and may not be aware of community evacuation and other fire related activities.

C101.5 Notification. The notification section of the Community WUI Hazard Evaluation is designed to capture the presence and type of mass-notification tools available to emergency managers. It should be noted that reliance on individual notification methods may result in limited notifications. If a Reverse 911 system is in place, the percentage of the community that will potentially receive the notifications from this system will estimate the number of residents that may require different notifications. Sirens or other fixed notification systems with power backup should also be listed in this section along with the fraction of the population covered by these systems. Additional notification systems that don't require phone or internet are also captured in this section, since WUI events frequently result in power outages or other service interruptions.

C101.6 Evacuation. This section of the Community WUI Hazard Evaluation is not intended to replace a full community evacuation study or act as a community evacuation plan. The primary purpose of this section is to compute, given a number of assumptions, a Minimum Throughput Time (MTT), to provide an initial idealized order of magnitude time to be considered in the early stages of evacuation pre-planning. This information can be of value to first responders and community emergency planning personnel, as it may potentially highlight critical evacuation bottlenecks inside or outside the community.

The MTT concept is a traffic engineering calculation of roadway capacity to provide an initial lower bound for planning community evacuation. The MTT is intended for isolated and partly isolated interface and intermix communities rather than a city setting with large populations and complex evacuation routes. A community should consider a detailed evacuation study to further enhance the community evacuation plan. There is a significant body of work associated with developing dynamic evacuation models. An example of a framework which includes coupled fire and evacuation considerations, as well as background on the individual model components, was published in 2019 in Safety Science, Volume 118, authored by Ronchi et al., titled "An open multi-physics framework for modelling WUI fire evacuations," on pages 868-880.

The MTT considers two significant factors: bottlenecks within and beyond town, and the total number of vehicles that must be accommodated. Bottlenecks slowing traffic throughput may be located within or outside of jurisdictional boundaries. Bottlenecks occurring well beyond the evacuating community may cause ripple effects significantly impacting community evacuation. In identifying the population for computing the MTT, consideration should be given to neighboring settlements/communities that may share the same evacuation route(s). The MTT should consider the minimum number of traffic lanes (i.e., 8 lanes merging into 2 lanes should be treated as 2 lanes) available for evacuation, the community population and the average speed limit of the egress routes. Contraflow, the implementation of reverse direction traffic flow, may be considered here, along with provisions for first responder access to the community. The computed Minimum Throughput Time (MTT) does not account for any of the numerous potential hindrances to evacuation traffic, such as road accidents, reduced speed due to smoke obscuration, merging of traffic in town to feed the primary arteries, large vehicles that occupy more space than cars and have reduced maneuverability, or fire activity impacts, such as burn overs, causing evacuation lane(s) closures and potential slowdowns associated with traffic redirections.

The evacuation section is also used to identify vulnerabilities of egress arteries including vegetative fuel setbacks as well as any hazardous material facilities which might affect evacuation. Fuel setback information, collected in 0.15 miles (0.25 km) increments along egress routes, presented in the form of a histogram and a GIS layer, could help identify vulnerable spots that may potentially impact evacuation and identify candidate locations for fuel treatments.

The presence of a Community Evacuation Plan, the presence and capacity of safety zones and other large crowd assembly areas, and

whether evacuation drills are performed will contribute to the community evacuation preparedness overview. The number of hospitals and senior care facilities and their total capacity will provide further information to assess overall community evacuation needs.

C101.7 Infrastructure / COOP / COG. The locations and needs of key facilities for maintaining continuity of operations (COOP) and continuity of government (COG), such as police, fire, EMS, hospitals, government buildings, cell towers, water sources, water provider infrastructure, electrical utility key infrastructure and natural gas key infrastructure should be listed and incorporated in this part of the evaluation framework.

Infrastructure characteristics, particularly related to water supply and electric utilities, can impact response and potential pre-fire hazard reduction. The public water system dependence on power supply, including the availability of backup power sources (i.e., generator backup) will provide insight into the resilience of the water system. The location of power lines (i.e., above or below ground) can impact evacuation, as downed power lines can impact evacuation and mobility throughout the community.

C101.8 Fire Fighting Response. The type of fire department, whether volunteer, career, or combined, may impact the likely availability and response time of first responder resources. The density of firefighting (ff) responders, as a ratio of the number of personnel on shift to the number of structures (number of ffs/number of structures) will provide information on the maximum possible coverage by the local resources.

In this section, mutual aid resources should be counted only if mutual aid agreements are in place and can ensure rapid deployment. Mutual aid response is captured through a histogram in 1-, 2-, 3- and 4-hour travel times. This may also be approximated using a geographic radius of distance from the community. The purpose of this information is to provide insight into the minimum response times by mutual aid.

TABLE C101.1 COMMUNITY WUI FIRE HAZARD EVALUATION FRAMEWORK

COMMUNITY	DATA TYPE	DATA LAYER IN MDS
Community shapefile, geodatabase or Geo-Package including topography and geographic attributes, and prevailing weather patterns (e.g., wind)	GIS layer	X
FUELS		
Structure Density (structure separation distances—SSD)	SSD histogram	
Age of structures	Histogram	
Vegetative fuel loading	Fuel type	
Fuel type	Tons/acre	
Fuel loading		
Natural and artificial fuel breaks	List, GIS layer	X
(including fuel treatments withina dn around community and year built)		
Community hazards (e.g., hazmat and high fuel load facilities)	Specify, GIS layer	X
Fire History	Frequency of, and most recent, fires in/around community	X
POPULATION		
Population	Number, age distribution	
Density	Number/acre	
Permanent/transient ratio	P/T ratio	
NOTIFICATION		
Reverse 911	Opt-in/Opt-out	
Opt-in or Opt-out	Percentage	
Percent of population enrolled in Reverse 911		
Sirens or other notification with power backup	List	
Percent of populatin within siren coverage range	Percent of population	
Notification dissemination without phone or internet	Y/N	
EVACUATION		
Egress Route Capacity (Minimum Throughput Time)	Time (hours)	

Vulnerability of egress arteries:	Fuel setback data, GIS layer,	X	
Fuel setback	Specify, GIS layer	X	
Hazmat/highfuel load factilities affecting evacuation		X	
Other			
Hospitals and senior care facilities	Specify, number of persons		X
Community evacuation plan	Y/N, specify, GIS layer	X	
Safety zones and large crowd assembly areas, capacity	Y/N, specify, GIS layer	X	
Evacuation drills	Y/N, specify, GIS layer	X	
Community in evacuation route of other communities, through-flow number	Y/N, identify, number		
INFRASTRUCTURE / COOP / COG			
Location and needs of key facilities	List		X
Public water	Y/N		
Dependence on power	Y/N		
Generator backup	Y/N		
Community owned water	Y/N		
Power lines around primary arteries (above ground or below)	Above or Below		X
Critical infrastructure that requires fuel to keep operating	Specify, GIS layer		X
FIRE FIGHTING RESPONSE			
Volunteer vs Career	Volunteer / career / combination		
(availability of first responder resources at station)			
Density of firefighting (FF) responder to number of structures (FF/structure ratio)	FF/structure		
Mutual aid response (engines-hours histogram) and agreements with mutual aid	Engines-hours histogram		

Reason: The proposed appendix in the Wildland Urban Interface Code is meant to be a tool to enable communities to collect, assemble, and represent the associated risks within the Wildland Urban Interface (WUI) fire area.

Community level fire hazard data is not always readily available in a centralized location and not in a standard format. The proposed framework enables communities' leaders to collect their WUI fire hazard data in an immediately accessible format.

This framework allows the community WUI fire hazard area data to be an inclusive picture. Part of the data assembled in the framework layout will help first responders during an incident. This data may enhance situational awareness, facilitate ingress and egress routes, and increase structure survivability through targeted fire responder actions.

The framework allows decision makers the ability to access WUI fire hazard risks across multiple communities when implemented in this standardized method. For example, a comparison can be made between a community of 5,000 residents to a community with 20,000 residents. They will be able to compare their overall fire hazard as well as the relative fire hazard.

The information from the standardized framework may be used to assist with making design and prioritize resources at the community, county, and state level. These resources may include funding for fuel treatment around communities in designated very high fire hazard severity zones.

The proposed framework has the benefit of enabling communities, county and state to use a methodized approach to assess hazards, offer property solutions and inform first responders before and during incidents.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The cost impact will be varied. Much of the data is already available but may be in many different documents. Pulling the data together will range from zero to "X" amount for a new community starting from scratch. The intent is to be a standard approach for any size community.

WUIC71-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Concern that the framework outline in the proposal is a lot more sophisticated than is currently in the existing appendix and how it relates back to the severity and additionally how it is treated elsewhere in the code. Concern for states like New York that have a statewide mutually globalization plan and how that is calculated into this, especially the value of structural firefighting versus wildland firefighting abilities. (Vote: 12-1)

WUIC71-24

Individual Consideration Agenda

Comment 1:

Proponents: Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov) requests As Submitted

Reason: same as original proposal

Bibliography: same as original proposal

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Comment (CAH2)# 803

WUIC72-24

IWUIC: APPENDIX G, SECTION G101, G101.1, G101.2, G101.3, G101.3.1, G101.3.2, G101.3.3, G101.3.4, G101.3.5, G101.3.6, G101.4, APPENDIX G (New), SECTION G101 (New), G101.1 (New), G101.2 (New), G101.2.1 (New), G101.3 (New), G101.3.1 (New)

Proposed Change as Submitted

Proponents: Cary Yballa, Central County Fire Department, Cal FPO (cyballa@ccfd.org); Crystal Sujeski, CAL FIRE/Office of the State Fire Marshal (crystal.sujeski@fire.ca.gov); Darcy Davidson, Carlsbad Fire Department, California Fire Prevention Officers (darcy.davidson@carlsbadca.gov)

2024 International Wildland Urban Interface Code

Revise as follows:

~~APPENDIX G~~
~~SELF-DEFENSE MECHANISM~~

~~SECTION G101~~
~~GENERAL~~

~~**G101.1 Identification of the problem.** The *International Wildland-Urban Interface Code* establishes a set of minimum standards to reduce the loss of property from wildfire. The purpose of these standards is to prevent wildfire spreading from vegetation to a building. Frequently, proposals are made by property or landowners of buildings located in the wildland-urban interface to consider other options and alternatives instead of meeting these minimum standards. This appendix chapter provides discussion of some elements of the proposed self-defense mechanisms and their role in enhancing the protection of exposed structures.~~

~~**G101.2 Structural survivability.** Various stages of assault occur as a building is exposed to a wildland-urban fire. Ashes are cast in front of a fire out of a smoke or convection column, which can result in secondary ignitions. Heavier embers that have more body weight and may contain more heat to serve as sources of ignition follow. Finally, the actual intrusion of a flame front and the radiant heat flux can expose combustibles outside of a building and the exterior structure of a building to various levels of radiant heat. A study revealed that the actual exposure of a building to the flame front by the perimeter of the fire was usually less than 6 minutes. However, the exposure to the forms of other materials that can result in proliferation of other ignitions can vary, depending on wind, topography and fuel conditions. To enhance structural survivability, the self-defense mechanisms must, first, do everything possible to prevent the ignition of materials from objects that are cast in front of the fire and, second, they must withstand the assault of the fire on the structure to prevent flames from penetrating into the building and resulting in an interior fire. There are considerable problems in achieving both of these objectives using some of the proposed alternative forms of protection such as the lack of definitive standards for self-defense mechanisms on the exterior of buildings. Although fire service has done considerable research into the evaluation of technology, such as smoke detectors, fire alarms, and interior sprinkler systems, very limited amount of study has been done on exterior sprinkler systems.~~
~~All forms of fire protection are classified as either active or passive. Active fire protection is taking specific action to control the fire in some manner. Passive fire protection uses resistance to ignition or provides some form of warning that allows other action to be taken. These two classifications of self-defense mechanisms create different problems with regard to being accepted as alternatives for building construction. Furthermore, certain self-defense mechanisms must be built in during new construction, and others may only be capable of being added as a retrofit to existing structures. As a matter of public policy, most *code officials* are reluctant to accept passive fire protection as an equivalent to a construction requirement, but are also reluctant to accept active fire protection systems that require intervention by suppression personnel.~~
~~The unequal distribution of self-defense mechanisms within a specific neighborhood poses another problem. If an individual is granted a waiver or exemption on the basis of putting in a nonmandated self-defense mechanism, and the neighbors to either side choose not to do so, or are not given the same options, there is a potential operational problem.~~

~~**G101.3 Alternative concepts.** Sections G101.3.1 through G101.3.6 provide consideration of several alternative self-defense~~

mechanisms.

G101.3.1 Exterior sprinkler systems. Currently, there is no nationally accepted standard for the design and installation of exterior fire sprinkler systems. Interior sprinkler systems are regulated by nationally recognized standards that have specific requirements. However, exterior sprinkler systems lack such uniformity. What is generally proposed is a type of sprinkler system, placed on the roofs or eaves of a building, whose primary purpose is to wet down the roof. These types of systems can be activated either manually or automatically. However, the contemporary thought on exterior sprinkler systems is that if the roof classification is of sufficient fire resistance, exterior sprinklers are of little or no value. Another option and alternative with exterior sprinklers is to use them to improve the relative humidity and fuel moisture in the *defensible space*. In this case, the exterior sprinkler is not used to protect the structure as much as it attempts to alter the fuel situation. However, studies do not support the idea that merely spraying water into the air in the immediate vicinity of a rapidly advancing wildland-urban fire does much good. Clearly, irrigation systems that keep plants healthy and fire-resistive plants that resist convection and radiated heat can accomplish the same purpose.

G101.3.2 Alternative water supply systems for exposure protection. Pools and spas are often offered as an alternative water source for fire departments. These water sources must be reliable and able to be accessed to be of any use by fire protection forces. Accessibility means that the fire department must be able to withdraw the water without having to go through extraordinary measures such as knocking down fences or having to set up drafting situations. Designs have been created to put liquid- or gas-fueled pumps or gravity valves on pools and spas to allow fire departments to access these water systems. A key vulnerability to the use of these alternative water systems is loss of electrical power. When the reliability of a water system depends on external power sources, it cannot be relied upon by fire fighters to be available in a worst-case scenario.

G101.3.3 Class A foam systems. One technology is Class A foam devices. These are devices that allow a homeowner to literally coat the exterior of their house with a thick layer of foam that prevents the penetration of embers and radiant heat to the structure. Experiments in various wildland fire agencies advocate foaming houses in advance of fire and flame fronts. To be accepted by the *code official*, the Class A foam system should pass rigorous scrutiny with regard to the manner and needs in which it is activated, the ways and means in which it is properly maintained, and a ways and means to test the system for its operational readiness during hiatus between emergencies.

G101.3.4 Enhanced exterior fire protection. This alternative method would increase the degree of fire resistance on the exterior of a building. This is most often an alternative recommended as a retroactive application when individual properties cannot achieve adequate *defensible space* on the exterior of a building. Normally, fire resistance and building scenarios are concerned with containing a fire. Fire-resistance ratings within building design ensures resistance to a fire for the specified time to compartmentalize the building's interior.To improve fire resistance on the exterior of the structure, the primary emphasis is on preventing intrusion into the building. This means protection of apertures and openings that may or may not be required to have any degree of fire resistance by accepted building codes. The option that is available here is for individuals to provide coverage in the form of shutters or closures to these areas, which, along with maintenance of combustible-free perimeters, can often prevent intrusion.

There are obvious limitations to this alternative. First and foremost is the means of adequately evaluating the proposed fire resistance of any given assembly. Testing techniques to determine fire resistance for such objects as drywall and other forms of construction may not be applicable to exterior application. Nonetheless, *code officials* should determine the utility of a specific fire resistance proposal by extrapolating conservatively.

G101.3.5 Shelter in place. Developments in the wildland-urban interface may be designed to allow occupants to "Shelter in place." Use of this design alternative should include ignition-resistant construction, access, water supply, automatic sprinkler systems, provisions for and maintenance of *defensible space*, and a *Fire Protection Plan*.A *Fire Protection Plan* describes ways to minimize the fire problems created by a specific project or development. The purpose for the *Fire Protection Plan* is to reduce the burden and impact of the project or development on the community's fire protection delivery system. The plan may utilize components of land use, building construction, vegetation management and other design techniques and technologies. It should include specific mitigation measures consistent with the unique problems resulting from the location, topography, geology, flammable vegetation and climate of the proposed site. The plan shall be consistent with this code, and approved by the fire *code official*. The cost of preparation and review is to be borne by the project or development proponent.

G101.3.6 Building location. The location of a new building within lot lines should be considered as it relates to topography and fire

~~behavior. Buildings located in natural chimneys, such as narrow canyons and saddles, are especially fire prone because winds are funneled into these areas and eddies are created. Buildings located on narrow ridges without setbacks may be subjected to increased flame and convective heat exposure from a fire advancing from below. Stone or masonry walls can act as heat shields and deflect the flames. Swimming pools and rated or noncombustible decks and patios can be used to create a setback, decreasing the exposure to the structure. Attic and under floor vents, picture windows and sliding glass doors should not face possible corridors due to the increased risk of flame or ember penetration.~~

~~**G101.4 Conclusion.** The purpose of the *International Wildland-Urban Interface Code* is to establish minimum standards that prevent the loss of structures, even if fire department intervention is absent. To accept alternative self-defense mechanisms, the *code official* must carefully examine whether these devices will be in place at the time of an event and whether they will assist or actually complicate the defense of the structure by fire suppression forces if they are available.The best alternative to having a building comply with all of the provisions of this code is to remove sources of fuel. This is closely paralleled by excellent housekeeping between the vegetation and the structure. Alternative ways of achieving each of these goals can and should be considered after scrutiny by appropriately credentialed and qualified fire protection personnel.~~

Add new text as follows:

APPENDIX G
VOLUNTARY HOME-HARDENING RECOMMENDATIONS

SECTION G101
GENERAL

G101.1 Identification of the problem. The International Wildland-Urban Interface Code establishes a set of minimum standards to reduce the loss of property from wildfire. The purpose of these standards is to prevent wildfire from spreading from vegetation to a building. Many homes were built in the wildland-urban interface areas prior to the implementation of provisions found in this code. As a result, many homes are lacking in their ability to survive an approaching wildfire. Many of the features discussed herein are designed as low-cost features to retrofit existing homes. Additionally, many owners desire to increase the survivability of their home and provide additional protection beyond the minimums prescribed in this code. This appendix chapter provides discussion of some elements of possible features to enhance survivability and harden the structure against an approaching wildfire.

G101.2 Structural survivability. The home hardening features listed in Section G101.21 were developed as a best practices guide to assist homeowners to increase the ignition-resistance of their homes from wildfires. Some of these items are based on upgrading to more stringent building materials when that building component is due for replacement as part of its normal maintenance or lifespan, such as the roof covering.

G101.2.1 Home hardening features. If homes are not already provided with the suggested protection, the following items should be considered in hardening a home against wildfire:

1. When it is time to replace your roof, replace it with a Class A fire rated roof.

2. Block any spaces between your roof covering and sheathing with noncombustible materials (bird stops).

3. Install a noncombustible gutter cover on gutters to precent the accumulation of leaves and debris in the gutter.

4. Cover your chimney and stovepipe outlets with a noncombustible corrosion resistant metal mesh screen (spark arrestor), with 3/8-inch to 1/2-inch openings.

5. Install ember and flame-resistant vents.

6. Caulk and plug gaps greater than 1/8-inch around exposed rafters and blocking to prevent ember intrusion into the attic or other enclosed spaces.

7. Inspect exterior siding for dry rot, gaps, cracks, and warping. Caulk or plug gaps greater than 1/8-inch in siding and replace any damaged boards, including those with dry rot

8. Install weather-stripping to fill gaps greater than 1/8-inch between garage doors and door frames to prevent ember intrusion. The weather-stripping must be compliant with UL Standard 10C.

9. When it's time to replace your windows or skylights, replace them with multilayered glazed panels containing at least one tempered pane or dome.

10. When it's time to replace your siding or deck, use compliant noncombustible or ignition-resistant materials.

11. Cover openings to operable skylights with noncombustible metal mesh screen with openings in the screen not to exceed 1/8-inch.

12. Install a minimum 6-inch metal flashing, applied vertically on the exterior of the wall at the deck-to-wall intersection to protect the building siding material.

G101.3 Defensible space features. The maintenance and defensible space features listed in Section G101.31 were developed as a best practices guide to assist homeowners to increase the effectiveness of their defensible space and improve the effects of the home hardening features to increase the survivability of their homes from wildfires.

G101.3.1 Maintenance and defensible space. The following maintenance and operational procedures assist to limit the impact on a home from an approaching wildfire:

1. Regularly clean your roof, gutters, decks, and the base of walls to avoid the accumulation of fallen leaves, needles, and other flammable materials.

2. Ensure that all combustible materials are removed from underneath, on top of, or within five feet of a deck.

3. Remove vegetation or other combustible materials that are within five feet of windows and glass doors.

4. Replace wood mulch products within five feet of all structures with noncombustible products such as dirt, stone, or gravel.

5. Remove all dead or dying grass, plants, shrubs, trees, branches, leaves, weeds, and pine needles within 30 feet of all structures or to the property line.

6. Ensure exposed firewood is stored at least 30 feet away from structures or completely covered in a fire-resistant material that will not allow embers to penetrate. Additionally, make sure you have 10 feet of clearance around your wood piles.

7. Be sure to store combustible outdoor furnishings away from your home when not in use.

8. Remember to properly store retractable awnings and umbrellas when not in use so they do not collect leaves and embers.

Reason: Home hardening is the term used to describe vegetation management compliance and building materials used to resist the intrusion of flames or embers projected by a wildland fire. It can be applied to new construction or for retrofitting an older home. Home Hardening considers the relationship between your home and its exposure to nearby combustible features such as vegetation, vehicles, accessory buildings, or even miscellaneous structures like a fence.

Your roof is one of the most vulnerable areas of your home! Due to its large surface area, your roof is more susceptible to embers and flame.

How is a roof vulnerable?

- Combustible roof coverings such as a non-fire-retardant treated wood shake or shingle roof. California requires roof coverings and assemblies to be Class A-ratedExternal Link. Common Class A roof coverings include asphalt shingles, tile or cement shingles, or metal panels.
- Gaps or openings in your roof assembly that have degraded exposing unprotected roof components.
- Debris accumulation on your roof, especially when located next to vulnerable areas such as combustible wall intersections.

What to do about a roof

- Keep your roof clear of debris and vegetation.
- Fill in gaps between the roof covering and the sheathing to prevent the intrusion of embers and flame.
- When it is time to replace your roof, install a Class A-rated roof covering such as asphalt fiberglass composition shingles.
- Replace combustible siding at roof-to-wall intersections with noncombustible siding.

How are roof attachments vulnerable?

- Debris accumulation around roof attachments.
- Gaps or penetrations in the roof covering from the installation of a roof attachment like a solar panel.

What to do about roof attachments

- Check periodically and keep areas around roof attachments free of debris.
- Ensure that roof attachments have enough space underneath them so that debris does not accumulate.
- Ensure openable skylights have a noncombustible metal mesh screen not exceeding 1/8 inch and have multipaned glazing with one layer of tempered glass.
- Install metal flashing around exposed wood frame skylights.

Check your gutters! Clean gutters regularly and install noncombustible gutter covers on gutters.

How are gutters vulnerable?

- Gutters without a gutter cover can allow accumulation of debris making it highly susceptible to embers and fire. If the debris catches on fire, it exposes unprotected combustible areas of your roof assembly.
- Gutters made of combustible materials such as vinyl can catch on fire and expose unprotected combustible areas of your roof assembly.

What to do about gutters

- At a minimum, install a noncombustible gutter cover to reduce the buildup of debris. When it is time to replace your gutters, replace them with a non-combustible option such as metal.
- Ensure your roof has a metal drip edge installed that completely covers the space above your gutter system.

Make sure your vents are protected from embers and fire. Upgrade your vents!

How are vents vulnerable?

- Access points such as your attic or crawlspace vents are areas embers or flames can enter and ignite combustible materials inside your home.
- Inlet vent that allows for the entry of wind-blown vegetative debris. Ridge or off-ridge vents located on your roof are more susceptible.
- Vents constructed of flammable materials such as plastic are highly vulnerable to embers and flames.

What to do about vents

- At a minimum, vents should have metal mesh screening that is at least 1/8 inch to protect against embers and flame.
- Upgrade to WUI-rated ember/flame-resistant vents. Be sure to accommodate for proper ventilation. Consult your local building official or licensed contractor for local building requirements for wildland areas.
- Keep debris away from all vents.
- Properly seal all openings including around blocking in vent areas.

Plug gaps or openings in your eaves and remove all vegetation and combustible materials that are directly underneath.

How are eaves vulnerable?

- Open eave construction with gaps or penetrations between the rafter tails and blocking as they are entry points for embers.
- Vents in eaves with gaps or penetrations in the blocking.
- Wide overhangs.
- Combustible fuel sources next to your home that can create a fire pathway for embers or flames to your eaves.

What to do about eaves

- Remove vegetation and combustible materials directly below eaves.
- Create a soffit eave (horizontal) or enclose eave (angled) using noncombustible material. Consult your local building official or licensed contractor for building codes in your area.
- Inspect eaves for gaps around rafter roof tails and blocking. Plug or caulk gaps.

Exterior siding that is combustible, has gaps, holes, or rot is vulnerable to both embers and flame.

How is siding vulnerable?

- If ignited, combustible siding can provide a path for flames to penetrate through other vulnerable areas such as windows, under-eave areas, or vents.
- Siding ignition from nearby combustibles that are too close to the house.
- Roof-to-wall areas where combustible siding is present.

- Gaps or penetrations in the exterior covering that are larger than 1/8 of an inch.

What to do about siding

- Plug or repair all gaps, holes, or rot in your exterior siding.
- Consider replacing combustible siding with a noncombustible or ignition-resistant material option. Consult your local building official or licensed contractor for local building codes in wildland areas.
- If a full replacement of your exterior covering is not possible then consider a partial replacement by using a noncombustible siding material for the bottom 2 feet from the ground and add metal flashing to protect the bottom edge sheathing.

Close the gap! Poorly sealed doors with gaps or penetrations provide a path for embers to enter your home or garage.

How are doors vulnerable?

- Doors that have rot or decay.
- Combustible door framing material as embers tend to accumulate at the bottom thresholds and sides.
- Doors that have gaps or penetrations greater than 1/8 inch.
- Door screens that are not made of metal mesh.
- Fuel sources stored nearby or inside a garage which increases its ignition potential.
- Garage doors that lack gasketing or have gaps that allow for the intrusion of embers.

What to do about doors

- Install or replace non-compliant wood screen or sliding doors with a noncombustible option.
- Install metal mesh screens in sliding or screen doors.
- Relocate combustibles and flammables inside your garage so they are not located next to ignition sources.
- Add metal flashing at garage door jambs and headers.
- Add gasketing (weather-striping) to garage doors to prevent ember intrusion.

Remove combustibles and vegetation around windows and upgrade older vulnerable single-pane windows with ones designed for areas that experience wildland fire.

How are windows vulnerable?

- Windows that are left open unattended.
- Combustible framing material that, when ignited, glass breaks or falls out providing a path for embers or flames to enter your home.
- Radiant heat which can cause windows to break even before fire reaches the house. Single-pane and large windows are particularly vulnerable.
- Windows that face large vegetation areas or have vegetation directly underneath.
- Vinyl windows that do not have an internal reinforcement bar in the horizontal or vertical separator member as they are prone to failure from radiant exposure due to deformation of the frame.

What to do about windows

- Install or upgrade to double-pane tempered glass windows. Tempered glass is about four times more resistant to breaking during a wildfire.
- Noncombustible metal framing material is an optimal choice.
- Confirm if vinyl windows have a vertical or horizontal reinforcement bar.
- Create a 0 to 5 ember-resistant zone by removing vegetation and other combustibles by all windows.
- Install metal mesh window screens to improve the performance of windows subjected to radiant heat exposure.

Protect your deck! Deck ignitions can start from flames underneath or embers on top.

How is a deck vulnerable?

- Combustible damaged or rotting deck boards as they are more easily ignitable.

- Deck boards made of combustible materials that are attached to the residence.
- Deck-to-wall intersections that have combustible siding and no metal flashing.
- Combustibles within the first 0 to 5 feet zone around a combustible deck (patio furniture, planter boxes, door mats, etc.)
- Combustible items stored underneath your deck that could be an ignition source for fire.
- Decks that overhang a slope that can be exposed to flames from trees or other vegetation downslope.
- Lattice or other combustible fencing options are used as a vertical enclosure under a deck, as it is readily ignitable.

What to do about decks

- Create an ember-resistant zone under the deck footprint extending five feet outward to reduce the likelihood of under-deck flame exposure. Use hardscapes like gravel, pavers, or concrete.
- Ensure sufficient defensible space if your deck is overhanging and located on a slope to minimize flame spread.
- Replace deck boards with ignition-resistant, noncombustible, fire-retardant-treated wood, or material that complies with performance testing standards (this includes steps, stairs, and railings).
- Replace any damaged or rotting deck boards as they ignite more easily.
- Install a minimum of a 6-inch metal flashing applied vertically on the exterior wall and at deck-to-wall intersections.
- If a full replacement of your deck is not possible then consider a partial replacement by replacing the walking surface boards with a noncombustible option for the first 1 ft. away from the residence.
- Remove combustible items stored under your deck.
- Regularly clear debris on top of or underneath your deck.

Bibliography: https://www.fire.ca.gov/home-hardening

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The section is voluntary. The cost is determined based on the recommendations to harden an existing structure in the Wildland Urban area.

WUIC72-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee stated that the reasons for the approval of the proposal were: It updates the appendix with new information and brings it up to current criteria. It is an information only existing appendix that is being updated with current terminology. It is an appropriate change regarding providing information and as an educational piece, it also allows ICC as a code organization to modify it as the code continues to be modified to make sure it aligns the two groups together. It has a lot of credibility because it's been vetted by organizations that have expertise and it correlates with the intent of the code. (Vote: 11-2)

WUIC72-24

Individual Consideration Agenda

Comment 1:

IWUIC: G101.2.1

Proponents: Aaron Phillips, Asphalt Roofing Manufacturers Association (ARMA), Asphalt Roofing Manufacturers Association (aphillips@asphaltroofing.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Wildland Urban Interface Code

Revise as follows:

G101.2.1 Home hardening features. If homes are not already provided with the suggested protection, the following items should be considered in hardening a home against wildfire:

1. When it is time to replace your roof, replace it with a *roof assembly* classified as Class A when tested in accordance with ASTM E108 or UL 790 ~~fire rated roof~~.
2. Block any spaces between your roof covering and sheathing with noncombustible materials (bird stops).
3. Install a noncombustible gutter cover on gutters to precent the accumulation of leaves and debris in the gutter.
4. Cover your chimney and stovepipe outlets with a noncombustible corrosion resistant metal mesh screen (spark arrestor), with 3/8-inch to 1/2-inch openings.
5. Install ember and flame-resistant vents.
6. Caulk and plug gaps greater than 1/8-inch around exposed rafters and blocking to prevent ember intrusion into the attic or other enclosed spaces.
7. Inspect exterior siding for dry rot, gaps, cracks, and warping. Caulk or plug gaps greater than 1/8-inch in siding and replace any damaged boards, including those with dry rot
8. Install weather-stripping to fill gaps greater than 1/8-inch between garage doors and door frames to prevent ember intrusion. The weather-stripping must be compliant with UL Standard 10C.
9. When it's time to replace your windows or skylights, replace them with multilayered glazed panels containing at least one tempered pane or dome.
10. When it's time to replace your siding or deck, use compliant noncombustible or ignition-resistant materials.
11. Cover openings to operable skylights with noncombustible metal mesh screen with openings in the screen not to exceed 1/8-inch.
12. Install a minimum 6-inch metal flashing, applied vertically on the exterior of the wall at the deck-to-wall intersection to protect the building siding material.

Reason: This comment coordinates language in section G102.2.1 with changes brought forward in WUIC33-24, which was recommended for approval as submitted during Committee Action Hearing #1. ASTM E108 and UL 790 tests are performed on *roof assemblies* to establish a classification (Class A, B, or C). In contrast, ASTM E119 or UL 263 tests evaluate the duration for which building elements contain a fire, retain their structural integrity, or exhibit both properties during a predetermined test exposure. The result of these tests is expressed as a *fire resistance rating.*

The current language in G101.2.1, item 1 implies that a fire resistance rated roof should be installed, when the intent is to recommend that the building owner install a roof assembly classified as Class A in accordance with ASTM E108 or UL 790.

Even though this is an informational section, there is benefit to clarification of the language for consistency with other sections of the

International Codes.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The modification offered in this comment clarifies existing provisions. Therefore, no change in cost of construction is expected.

Comment (CAH2)# 22