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**Issue Theme:
2018 ICC Code Changes Related to Wood**

Editorial	2
2018 IBC and 2018 IEBC Changes Related to Wood Construction	3
<i>John "Buddy" Showalter, P.E., David P. Tyree, P.E., C.B.O., and Sandra Hyde, P.E.</i>	
2018 International Residential Code Changes Related to Wood Construction	19
<i>John "Buddy" Showalter, P.E., Loren Ross, P.E., and Sandra Hyde, P.E.</i>	
2018 Fire, Energy, and WUI Code Changes Related to Wood Construction	39
<i>John "Buddy" Showalter, P.E., Loren Ross, P.E., and Sam Francis, C.B.O.</i>	

Editorial

Changes to the 2018 family of I-codes were approved by the International Code Council (ICC) during their 2015/2016 code development cycle. This issue of *Wood Design Focus* outlines changes to code requirements primarily related to wood construction.

The first paper deals with the 2018 *International Building Code (IBC)* and 2018 *International Existing Buildings Code (IEBC)*. Changes discussed include updates to code-referenced industry standards, improvements to exterior balcony provisions, modifications to special inspection and structural observation criteria, improved fire protection requirements, and clarifications to provisions for various wood materials including fire retardant treated wood, heavy timber, and mass timber.

The second article includes discussion of changes to the 2018 *International Residential Code (IRC)*. Changes discussed include updates to code-referenced industry standards, improvements to fastener and framing provisions, revised fire resistance and sprinkler requirements, and significant reorganization and updates to wood deck provisions.

Finally, the third paper covers changes to the 2018 *International Fire Code (IFC)*, 2018 *International Energy Conservation Code (IECC)*, and 2018 *International Wildland Urban Interface Code (IWUIC)*. Changes discussed include revisions to the IECC residential and commercial code provisions including correlation of U-factors and R-values in the latter. Updates to the IFC address fire protection on active construction sites, new conditions which trigger sprinkler requirements for multi-family buildings equipped with NFPA 13R sprinkler systems, and other improvements. The IWUIC now permits the use of FRTW in Class 3 ignition resistant construction.

Accompanying discussion of each code change is the ICC code change tracking number that can be used to search for more information on the ICC website. An appendix included with each article contains a strikethrough/underline format of changes where it is deemed helpful to understand the code changes outlined.

We hope you find this issue of *Wood Design Focus* informative. As always, comments and questions are welcome.

John "Buddy" Showalter, P.E.
Editorial Board Chair

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BShowalter@awc.org

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15 Technology Parkway South
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Phone: (855) 475-0291
Fax: (301) 604-0158
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2018 IBC and 2018 IEBC Changes Related to Wood Construction

John “Buddy” Showalter, P.E., David P. Tyree, P.E., C.B.O., and Sandra Hyde, P.E.

Introduction

Changes to the 2018 *International Building Code (IBC)* and 2018 *International Existing Building Code (IEBC)* were approved by the International Code Council (ICC) during their 2015/2016 code development cycle. This article outlines changes to the code requirements for wood construction. The majority of changes discussed are to the IBC. Only a few changes for exterior balconies involve the IEBC. Accompanying discussion of each code change is the ICC code change tracking number [bracketed] that can be used to search for more information on the ICC website (iccsafe.org). The Appendix to this paper, beginning on page 8, contains a strikethrough/underline format of changes where it is deemed helpful to understand the code changes outlined herein.



Referenced Standards

American Wood Council (AWC) standards as well as other code referenced standards are updated [ADM94-16]. The 2018 *National Design Specification® (NDS®) for Wood Construction* and the 2018 *Wood Frame Construction Manual for One-and-Two Family Dwellings* were “Approved as Submitted” without modification.

The 2015 *Special Design Provisions for Wind and Seismic (SDPWS)* and 2015 *Permanent Wood Foundation Design Specification* are both still referenced in 2018 IBC.

The following updated APA-The Engineered Wood

KEYWORDS: balconies, special inspection, ASCE 7, NDS, FRTW, timber

Association ANSI standards were also included by [ADM94-16]:

- ANSI A190.1-2017 Structural Glued Laminated Timber
- ANSI/APA PRG-320-2017 Standard for Performance-Rated Cross-Laminated Timber
- ANSI/APA PRP 210-2014 Standard for Performance-Rated Engineered Wood Siding
- ANSI/APA PRR 410-2016 Standard for Performance-Rated Engineered Wood Rim Boards
- ANSI 117-2015 Standard Specification for Structured Glued Laminated Timber of Softwood Species

Approved Agencies

Product certification report writing agencies were introduced in Section 202 into the definition of Approved Agency. [ADM6-16, Part 1 AMPC1]

Exterior Balconies

- Clarifies removal of balconies from the scope of IBC Chapter 14 Exterior Walls since all balcony provisions were moved to IBC Chapter 7 Fire and Smoke Protection Features, IBC 705.2 and 706.5.2 [S1-16 AM].
- Requires that ventilation openings be provided similar to rafter spaces when the floor structure of exterior balconies and decks are enclosed [S7-16 AM].
- Incorporates the requirement from *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* for design live load of balconies and decks at 1.5 times the live load of the area served by the balcony or deck not to exceed 100 psf [S85-16].
- Requires detailing on plans of all impervious moisture barrier system elements (including manufacturer's instructions when applicable) if the impervious moisture barrier option is used in IBC 2304.12.2.5 for wood framing supporting weather-exposed permeable floors, such as concrete or masonry slabs [ADM 77-16 AMPC1].
- Requires inspection of all impervious moisture barrier system elements, or special inspection can be utilized at the option of the code official if the impervious moisture barrier option is used in IBC 2304.12.2.5 for wood framing supporting weather-exposed permeable floors [ADM 87-16].
- Requires the impervious moisture barrier system to have positive drainage of water that infiltrates the permeable floor above the impervious moisture barrier when that option is used in accordance with IBC 2304.12.2.5 [S279-16 AMPC1].
- IEBC Chapter 1 revisions require details in construction documents and inspections for impervious moisture barriers used in exterior balconies [ADM 77-16 AMPC1].

An article on balcony detailing is available at this link: [buildingscience.com/documents/building-science-insights/bsi-093-all-decked-out](https://www.buildingscience.com/documents/building-science-insights/bsi-093-all-decked-out)

Special Inspection and Structural Observation

- For structural observation, modifies the wind trigger from 110 mph to 130 mph for Risk Categories III or IV to match the current factored level of wind forces [S133-16].
- Clarifies the main wind force-resisting system fastening exception to special inspection in wood frame construction (based on nail spacing for sheathing exceeding 4 inches on center) at the panel edges. [S145-16 AM].

Other Changes

- Clarifies the definition of Light-frame Construction by removing "method of construction" from the definition [G2-16 AM].
- Revises Table 1604.3 Deflection Limits in footnote "d" to recognize different wood products' creep behavior; specifically seasoned lumber, structural glued laminated timber, prefabricated wood I-joists, SCL, cross laminated timber and wood structural panels [S63-16 AM and S67-16]. A correlating change to add roof live load to the load combination was also made.
- Clarifies that hardboard siding used structurally must conform to ANSI A135.6 and be identified by a label containing the approval agency [S258-16].
- Creates consistency with *International Residential Code (IRC)* wood structural panel roof sheathing nail size by inclusion of 8d common nail and adds the Roof Sheathing Ring Shank Nail (RSRS-01) to Table 2304.10.1 as options for roof sheathing attachment [S272-16].
- Corrects the 10d common nail length, removes redundant requirements for stud nailing, creates consistency with the IRC for roof sheathing attachment, and adds an option for deformed shank nail roof sheathing attachment [S273-16].
- Adds a reference to IBC 2304.9 for lumber decking in IBC 2304.11 for heavy timber [S276-16].
- Adds an alternative fastening schedule for the construction of mechanically laminated decking made from 2-inch nominal dimension lumber to IBC 2304.9.3.2 [S281-16].

- Corrects the staple description for stapled fiberboard shear walls in Table 2306.3(2) [S286-16].
- Updates Table 2308.4.1.1(2) for Southern Pine No. 2 in lieu of Southern Pine No. 1 for interior bearing wall girder and header spans and includes the dropped and raised header distinction for spans [S288-16].
- Updates Table 2308.4.1.1(1) with Southern Pine No. 2 in lieu of Southern Pine No. 1 for exterior bearing wall girder and header spans and includes the dropped and raised header distinction for spans [S289-16].
- Adds prescriptive framing and connection requirements to IBC 2308.5.5.1 for single member (single ply) headers consistent with the IRC and coordinates code charging language with existing connection tables [S292-16].
- Updates references to current AWPA section numbering for preservative treatment used in permanent wood foundations and for wood shakes [S40-16].
- Clarifies that the minimum 5 psf horizontal live load is applicable to fire walls [S55-16 AM].
- Clarifies IBC 1615.1 regarding the applicability of structural integrity provisions in high rise buildings and precludes misinterpretation in regard to frame buildings [S126-16].
- Revision to IBC 1810.4.1.5 requires the removal of timber piles when a substantial and sudden change in rate of pile penetration occurs during driving [S233-16].
- Clarifies the IBC 2304.12.2.2 treated wood exception for posts supported on pedestals [S278-16 AM].
- Modifies IBC equations 23-1 and 23-2 for deflection of diaphragms and shear walls fastened by staples to be consistent with AWC SDPWS equations for nailed diaphragms and shear walls [S282-16 and S284-16].
- Clarifies in IBC 2308.2.3 that buildings with slab-on-grade floors can exceed a floor live load of 40 psf and still use the conventional wood frame construction provisions of IBC 2308 [S287-16].

Fire Retardant Treated Wood (FRTW)

- The approved modifications to IBC 2303.2.2 clarify that the "other means during manufacture" subsection is not intended to permit surface-protected products as outright replacements for fire retardant treated wood (FRTW), given the requirement for chemical impregnation into the wood. The modifications also preclude interpreting IBC 2303.2.2 as a ban or prohibition on surface-coated products. As has been the case for some time, wood products protected by surface treatments can be evaluated and approved by using the provisions of IBC 104.11 [S262-16 AM].
- Clarifies in IBC 2303.2.4 that FRTW must have the original product grade stamp in addition to the fire retardant treatment labeling [S265-16].

ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures

IBC changes regarding ASCE 7-16 are likely to lead to some confusion for designers and code officials. While the purpose of this article is to outline IBC changes that were approved, a few instances where changes were defeated are covered to allow for discussion of code paths to compliance with load provisions.

- Updates reference to ASCE 7-16 [ADM94-16].
- Updates IBC wind and seismic load provisions to agree with updated criteria in ASCE 7-16 [S56-16 AM and S114-16 AM].
- A proposal to update IBC snow load provisions to agree with updated criteria in ASCE 7-16 was defeated during online voting [S103-16 AMPC1 Defeated]. Therefore, the IBC allows three paths rather than one:
 1. Use the IBC to determine snow loads (Figure 1608.2 or Table 1608.2 for Alaska)
 2. Use IBC 1608.2, which references ASCE 7-16, and use the new tables for the western US and New Hampshire.
 3. Use IBC 1608.2 to go to ASCE 7-16, which states that if an area isn't in the new tables or exceeds the elevation limit (still a case study area), to then reference state produced maps

which have greater detail for the western US and New Hampshire.

- A proposal removing LRFD and ASD load combinations based on reference to ASCE 7-16 was also defeated during online voting [S78-16 AM AMPC1 Defeated].
- Updates references in Chapter 18 seismic provisions to coordinate with ASCE 7-16 [S166-16].
- On-line voting disapproved reference to ASCE 7-16 in IBC 1611 [S110-16 AMPC1 Defeated]. This has caused a difference in requirements for secondary drains. ASCE 7-16 bases minimum requirements on a 15 min/100-yr event. IBC still uses the 1 hr/100-yr event for both primary and secondary minimum drain flow.

Fire Protection

- Clarifies in IBC 704 that the protection of "gang studs" and built-up columns in the walls of lightweight construction can be provided by the membranes of the rated walls in which they are located [FS7-15 AM].
- Reduces existing requirements in Table 705.2 on the location of building projections, such as roof overhangs [FS13-15 AS].
- Relocates Chapter 14 Exterior Walls fire-related provisions for balconies, projections, and bay and oriel windows to Chapter 7 Fire and Smoke Protection Features [FS15-15 AM].
- Revision to IBC 706.2 allows 3/4-inch plywood to run continuous through double fire walls in high seismic areas (Seismic Design Categories D and F) [FS29-15 AMPC1].
- Clarifies sprinkler, fire partition, and draftstopping requirements in IBC 708 and 718 for multifamily structures. One change gives clear criteria for the sprinkler protection of attics without draftstopping [FS42-15 AMPC1].
- Corrects certain prescriptive fire-resistance rated I-joist assembly description errors in Table 721.1(3) [FS129-15 AS and FS130-15 AS].
- Adds direct code references in IBC 803.11 to ASTM E 2579-13 and E 2404-15a for the mounting of laminate

products, facings, and veneers with a wood substrate during testing [FS135-15 AS and FS136-15 AS].

- Revision to IBC 803.3 requires that cross laminated timber and heavy timber elements be subject to the normal flame spread limitations for exits similar to other materials in exit enclosures. A previous exception for heavy timber elements within exit enclosures is inappropriate for exposed mass timber elements that make up entire wall and ceiling sections [FS132-15 AS].
- Fire officials can require round-the-clock fire watch for construction that exceeds 40 feet above grade. [F329-16].
- Cleans up language permitting the use of FRTW sheathing in exterior walls of Type III and IV construction which is sometimes misinterpreted [G175-15 AS].
- Releases FRTW and CLT exterior walls from having an assembly minimum thickness in favor of simply requiring a minimum actual thickness solely for the CLT. The approach remains the same for CLT and corrects an unnecessary width restriction on FRTW exterior walls [G184-15 AS]. However, there is an errata to the 2018 IBC as follows:

602.4.1 Fire-retardant-treated wood in exterior walls.

Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies ~~not less than 6 inches in thickness~~ with a 2-hour rating or less.

602.4.2 Cross-laminated timber in exterior walls.

Cross-laminated timber complying with Section 2303.1.4 shall be permitted within exterior wall assemblies not less than 6 4 inches in thickness with a 2-hour rating or less, provided the exterior surface of the cross-laminated timber is protected by one the following:

1. Fire-retardant-treated wood sheathing complying with Section 2303.2 and not less than 15/32 inch thick;
2. Gypsum board not less than ½ inch thick; or
3. A noncombustible material.

Heavy Timber and Mass Timber

- Makes clear that SCL should be considered equivalent to heavy timber and clarifies the appropriate distinctions between nominal, net finished, and actual dimensions, for heavy timber, glulam, SCL, and CLT [G178-15 – AS].
- Reorganizes heavy timber provisions aiding clear application of Type IV (heavy timber) construction requirements while also providing for separate application of code provisions that allow or specify the use of "heavy timber" elements outside of Type IV construction. Certain heavy timber provisions are moved from Chapter 6 to Chapter 23 and a new table of minimum dimensions is introduced based on location within the building structure and condition of loading [G179-15 AS; G180-15 AS]. Due to the extensive nature of these changes, the strikethrough/underline format is not shown in Appendix A. However, a summary of relocated sections is shown. The changes can be viewed on the ICC website.

Construction Type

- Permits the use of roofs for various occupancies without classifying the building as one containing an additional story, thus assuring continued flexibility for buildings of wood construction types [G24-15 AMPC2].
- Permits performance-based alternatives for sound transmission design of floor assemblies using comparative engineering analysis [G190-15 AS].

Conclusion

The 2018 IBC and 2018 IEBC are both available from ICC (www.iccsafe.org) and represent the state-of-the-art for design and construction of buildings outside the scope of the *International Residential Code*. These codes reference the latest wood standards such as the 2018 NDS and include other important changes to requirements for wood construction. In some situations, a building designer may want to use a more current code provision or consensus standard than is recognized in the building code adopted by a jurisdiction. In those cases,

building officials, in accordance with Section 104.11 of the *International Building Code*, are permitted to accept designs prepared in accordance with newer consensus reference standards. IBC 104.11 allows a jurisdiction to approve new technologies in materials and building construction provided documentation provided to the jurisdiction is found to provide equivalency in quality, strength, durability and safety.

Citation

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David P. Tyree, P.E., C.B.O is the Central Regional Manager and John "Buddy" Showalter, P.E. is Vice President of Technology Transfer for the American Wood Council (AWC). Sandra Hyde, P.E. is Senior Staff Engineer with the International Code Council. Contact Mr. Showalter (bshowalter@awc.org) with questions.

APPENDIX: 2018 IBC and 2018 IEBC Changes Related to Wood Construction – Strikethrough/Underline Format

<p>ICC Code Change Tracking Number</p>	<p>Strikethrough/Underline Text (all code sections shown are for the IBC unless noted otherwise)</p>
<p>ADM6-16 AMPC1</p>	<p>SECTION 202 DEFINITIONS APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests, or furnishing inspection services, or furnishing <u>product certification</u>, where such agency has been approved by the building official.</p>
<p>ADM 77-16 AMPC1</p>	<p>107.2.5 Exterior balcony and elevated walking surfaces. Where balcony or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. <u>The construction documents shall include manufacturer’s installation instructions.</u></p> <p>IEBC 106.2.5 Exterior balcony and elevated walking surfaces. Where the scope of work involves a balcony or other elevated walking surfaces exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. <u>The construction documents shall include manufacturer’s installation instructions.</u></p>
<p>ADM 87-16 AMPC 1,2</p>	<p>110.3.6 Weather exposed balcony and walking surface waterproofing. Where balcony or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall be not be concealed until inspected and approved.</p> <p>Exception: Where special inspections are provided in accordance with Section <u>1705.1.1, Item 3.</u></p> <p>IEBC 109.3.6 Weather exposed balcony and walking surface waterproofing. Where the scope of work involves a balcony or other elevated walking surfaces exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall be not be concealed until inspected and approved.</p> <p>Exception: Where special inspections are provided in accordance with IBC Section <u>1705.1.1, Item 3.</u></p>

F329-16 AS	<p>3314.1 Fire watch during combustible construction. Where required by the fire code official, a fire watch shall be provided during non-working hours for construction that exceeds 40 feet in height above the lowest adjacent grade.</p>	
FS7-15 AM	<p>704.2 Column protection. Where columns are required to have protection to achieve a fire-resistance rating, the entire column shall be provided individual encasement protection by protecting it on all sides for the full column height, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.</p> <p>Exception: Columns that meet the limitations of Section 704.4.1.</p> <p>704.4.1 Light-frame construction. Studs, columns, and boundary elements that are integral elements in load-bearing walls of light-frame construction, and are located entirely between the top and bottom plates or tracks shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.</p>	
FS13-15 AS	<p>Fire Separation Distance – FSD (feet)</p>	<p>Minimum Distance From Line Used to Determine FSD</p>
	<p>0 feet to <u>less than 2</u></p>	<p>Projections not permitted</p>
	<p>2 to <u>less than 3</u></p>	<p>24 inches</p>
	<p>3 to less than 30 <u>5</u></p>	<p>24 inches plus 8 inches for every foot of FSD beyond 3 feet or fraction thereof</p>
	<p>30 feet <u>5 or greater</u></p>	<p>20 feet <u>40 inches</u></p>
FS29-15 AMPC1	<p>706.2 Structural stability. Fire walls shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. Fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.</p> <p>Exception: In SDC D through F, where double fire walls are used in accordance with NFPA 221, floor and roof sheathing not exceeding ¾ inch thickness shall be permitted to be continuous through the wall assemblies of light frame construction.</p>	
FS132-15 AS	<p>803.3 Heavy timber exemption. Exposed portions of building elements complying with the requirements for buildings of heavy timber construction in Section 602.4 or Section 2304.11 shall not be subject to interior finish requirements <u>except in interior exit stairways, interior exit ramps, and exit passageways.</u></p>	

<p>FS135-15 AS</p>	<p>803.11 Laminated products factory produced with a wood substrate. Laminated products factory produced with a wood substrate shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. The laminated product shall meet the criteria of Section 803.1.1.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, of actual use, as described in Section 5.8 of NFPA 286. 2. The laminated product shall have a Class A, B, or C flame spread index and smoke-developed index, based on the requirements of Table 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579. <p>Add new standard(s) as follows: ASTM E 2579-13 Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Surface Burning</p>
<p>FS136-15 AS</p>	<p>803.12 Facings or wood veneers intended to be applied on site over a wood substrate. Facings or veneers intended to be applied on site over a wood substrate shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. The facing or veneer shall meet the criteria of Section 803.1.1.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, as described in Section 5.9 of NFPA 286. 2. The facing or veneer shall have a Class A, B or C flame spread index and smoke-developed index, based on the requirements of Table 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2404.
<p>G2-16 AM</p>	<p>SECTION 202 DEFINITIONS</p> <p>CONVENTIONAL LIGHT-FRAME CONSTRUCTION. A type <u>method</u> of construction whose primary structural elements are formed by a system of repetitive wood-framing members. See Section 2308 for conventional light-frame construction provisions.</p> <p>LIGHT-FRAME CONSTRUCTION. A type <u>method</u> of construction whose vertical and horizontal structural elements are primarily formed by a system of repetitive wood or cold-formed steel framing members.</p>

G24-15 AMPC2

302.1 Occupancy classification. Occupancy classification is the formal designation of the primary purpose of the building, structure or portion thereof. Structures shall be classified into one or more of the occupancy groups listed in this section based on the nature of the hazards and risks to building occupants generally associated with the intended purpose of the building or structure. An area, ~~302.1 General Structures~~ or portions of structures shall be classified with respect to occupancy in one or more of the groups listed in this section. A room or space that is intended to be occupied at different times for different purposes shall comply with all applicable requirements that are applicable to each of the purposes for which the room or space will be occupied associated with such potential multipurpose. Structures with multiple occupancies or uses occupancy groups shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically provided for in this code listed in this section, such structure shall be classified in the group that the occupancy it most nearly resembles, according to based on the fire safety and relative hazard involved. Occupied roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved and shall comply with Section 503.1.4.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5.
2. Business (see Section 304): Group B.
3. Educational (see Section 305): Group E.
4. Factory and Industrial (see Section 306): Groups F-1 and F-2.
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5.
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4.
7. Mercantile (see Section 309): Group M.
8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4.
9. Storage (see Section 311): Groups S-1 and S-2.
10. Utility and Miscellaneous (see Section 312): Group U.

503.1.4 Occupied roofs. A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupied roofs shall not be included in the building area as regulated by Section 506.

Exceptions:

1. The occupancy located on an occupied roof shall not be limited to the occupancies allowed on the story immediately below the roof where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Section 907.5 is provided in the area of the occupied roof.
2. Assembly occupancies shall be permitted on roofs of open parking garages spaces of Type I or Type II construction, in accordance with the exception to Section 903.2.1.6.

503.1.4.1 Enclosures over occupied roof areas. Elements or structures enclosing the occupied roof areas shall not extend more than 48 inches above the surface of the occupied roof.

Exception: Penthouses constructed in accordance with Section 1510.2 and towers, domes, spires, and cupolas constructed in accordance with Section 1510.5

G175-15 AS	<p>602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. <i>Fire-retardant-treated wood framing and sheathing</i> complying with Section 2303.2 shall be permitted within <i>exterior wall</i> assemblies of a 2-hour rating or less.</p>		
G178-15 AS and G184-15 AS	<p>602.4 Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or <u>wood, laminated wood or structural composite lumber (SCL)</u> without concealed spaces. The <u>minimum dimensions for permitted materials including solid timber, glued-laminated timber, structural composite lumber (SCL), and cross-laminated timber and details of Type IV construction</u> shall comply with the provisions of this section and Section 2304.11. Exterior walls complying with Section 602.4.1 or 602.4.2 shall be permitted. <u>Interior walls and partitions not less than 1-hour fire-resistance rating or heavy timber complying with Section 2304.11.2.2 shall be permitted.</u></p> <p>602.4.1 Fire-retardant-treated wood in exterior walls. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less.</p> <p>602.4.2 Cross-laminated timber in exterior walls. Cross-laminated timber complying with Section 2303.1.4 shall be permitted within exterior wall assemblies not less than 4 inches in thickness with a 2-hour rating or less, provided the exterior surface of the cross-laminated timber is protected by one the following:</p> <ol style="list-style-type: none"> 1. Fire-retardant-treated wood sheathing complying with Section 2303.2 and not less than $\frac{15}{32}$ inch thick. 2. Gypsum board not less than $\frac{1}{2}$ inch thick. 3. A noncombustible material. 		
G179-15 AS and G180-15 AS	2018 IBC	2015 IBC	Provision
	602.4	602.4	Type IV construction
	602.4.1, 602.4.2	602.4.1	Wall assembly thickness
	602.4.3	602.4.9	Exterior structural members
	2304.11	2304.11	Heavy timber construction
Table 2304.11	Table 602.4	Minimum dimensions	

	2018 IBC	2015 IBC	Provision
G179-15 AS and G180-15 AS (continued)	2304.11.1	New	Details of heavy timber structural members
	2304.11.1.1	602.4.3, 2304.11.1	Columns
	2304.11.1.2	602.4.4, 2304.11.2	Floor framing
	2304.11.1.3	602.4.5, 2304.11.3	Roof framing
	2304.11.2.1	602.4.8.2	Exterior walls
	2304.11.2.2	602.4.8.1	Partitions and interior walls
	2304.11.3	602.4.6	Floors
	2304.11.3.1	602.4.6.2	CLT floors
	2304.11.3.2	602.4.6.1, 2304.11.4	Sawn or glued-laminated plank floors
	2304.11.4	2304.11.5	Roof decks
	G190-15 AS	<p>1206.2 Air-borne sound. Walls, partitions and floor-ceiling assemblies separating dwelling units and sleeping units from each other or from public or service areas shall have a sound transmission class of not less than 50, or not less than 45 if field tested, for air-borne noise when tested in accordance with <u>ASTM E90</u>. <u>Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies shall be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90.</u> Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.</p> <p>1206.3 Structure-borne sound. Floor-ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public or service area within the structure shall have an impact insulation class rating of not less than 50, or not less than 45 if field tested, when tested in accordance with <u>ASTM E-492</u>. <u>Alternatively, the impact insulation class of floor-ceiling assemblies shall be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures set forth in ASTM E492.</u></p>	

S1-16 AM	<p>1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for exterior walls; exterior wall coverings; exterior wall openings; exterior windows and doors; <u>and architectural trim. balconies and similar projections; and bay and oriel windows.</u></p>
S7-16 AMPC1	<p>2304.12.2.6 Ventilation required beneath balcony or elevated walking surfaces. Enclosed framing in exterior balconies and elevated walking surfaces that are <u>exposed to rain, snow, or drainage from irrigation, shall be provided with openings that provide a net free cross ventilation area not less than $\frac{1}{150}$ of the area of each separate space.</u></p>
S55-16 AM	<p>1607.15.2 Fire walls. In order to meet the structural stability requirements of Section 706.2 where the structure on either side of the wall has collapsed, <u>fire walls and their supports shall be designed to withstand a minimum horizontal allowable stress load of 5 psf.</u></p>
S67-16 AS and S63-16 AM	<p>Table 1604.3 Footnote d. The deflection limit for the $D+(L+L_r)$ load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For <u>wood lumber, structural glued laminated timber, prefabricated wood I-joists, and structural composite lumber members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from 0.5 D. For wood structural lumber and glued laminated timber members installed or used at all other moisture conditions or cross laminated timber and wood structural panels that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from D. The value of 0.5 D shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.</u></p>
S85-16 AS	<p>IBC Table 1607.1 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_0, AND MINIMUM CONCENTRATED LIVE LOADS</p> <p>5. Balconies and decks <u>1.5 times the live load for the area served. Not required to exceed 100 psf Same as occupancy served</u></p>
S133-16 AM	<p>1704.6.1 Structural observations for structures. Structural observations shall be provided for those structures where one or more of the following conditions exist:</p> <ol style="list-style-type: none"> <u>1. The structure is classified as Risk Category IV.</u> <u>2. The structure is a high-rise building.</u> <u>3. The structure has an occupant load of more than 1000.</u>

<p>S133-16 AM (continued)</p>	<p>3. When so designated <u>Such observation is required by the registered design professional responsible for the structural design.</u></p> <p>4. When such <u>Such observation is specifically required by the building official.</u></p> <p>1704.6.1 1704.6.2 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to Seismic Design Category D, E or F where one or more of the following conditions exist:</p> <ol style="list-style-type: none"> 1. The structure is classified as Risk Category III or IV. 2. The height of the structure is greater than 75 feet (22 860 mm) above the base as defined in ASCE 7. 2. The structure is assigned to Seismic Design Category E, is classified as Risk Category I or II, and is greater than two stories above grade plane. 3. When so designated by the registered design professional responsible for the structural design: 4. When such observation is specifically required by the building official: <p>1704.6.2 1704.6.3 Structural observations for wind requirements resistance. Structural observations shall be provided for those structures sited where $V_{asd\ ult}$ as determined in accordance with Section 1609.3.1 exceeds 110 mph <u>is 130mph or greater</u>, where one or more of the following conditions exist:</p> <ol style="list-style-type: none"> 1. The and the structure is classified as Risk Category III or IV. 2. The building height is greater than 75 feet (22 860 mm). 3. When so designated by the registered design professional responsible for the structural design: 4. When such observation is specifically required by the building official:
<p>S145-16 AM</p>	<p>1705.11.1 Structural wood. Continuous special inspection is required during field gluing operations of elements of the main wind force-resisting system. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of elements of the main wind force-resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.</p> <p>Exception: Special inspections are not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other elements of the main wind force-resisting system, where the <u>specified fastener spacing of the sheathing at panel edges</u> is more than 4 inches on center.</p>

S262-16 AM	<p>2303.2.2 Other means during manufacture. For wood products <u>impregnated with chemicals</u> 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. <u>The use of paints, coatings, stains or other surface treatment are not an approved method of protection as required in this section.</u></p>
S278-16 AM	<p>2304.12.2.2 Posts or columns. Posts or columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth shall be of naturally durable or preservative-treated wood.</p> <p><u>Exception: Posts or columns that are not exposed to the weather are supported by concrete piers or metal pedestals projected at least 1 inch (25 mm) above the slab or deck and 8 inches (203 mm) above exposed earth, and are separated by an impervious moisture barrier.</u></p> <p>Exception: Posts or columns that meet all of the following:</p> <ol style="list-style-type: none"> 1. <u>Are not exposed to the weather, or are protected by a roof, eave, overhang, or other covering if exposed to the weather,</u> 2. <u>Are supported by concrete piers or metal pedestals projecting not less than 1 inch above the slab or deck and are separated from the concrete pier by an impervious moisture barrier,</u> 3. <u>Are located not less than 8 inches above exposed earth.</u>
S279-16 AMPC1	<p>2304.12.2.5 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. <u>The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.</u></p>
S281-16 AS	<p>2304.9.3.2 Nailing. The length of nails connecting laminations shall be not less than two and one-half times the net thickness of each lamination. Where decking supports are 48 inches on center or less, side nails shall be installed not more than 30 inches on center alternating between top and bottom edges, and staggered one-third of the spacing in adjacent laminations. Where supports are spaced more than 48 inches on center, side nails shall be installed not more than 18 inches on center alternating between top and bottom edges and staggered one-third of the spacing in adjacent laminations. <u>For mechanically laminated decking constructed with laminations of 2-inch nominal thickness, nailing in accordance with Table 2304.9.3.2 shall be permitted. Two side nails shall be installed at each end of butt-jointed pieces.</u></p>

Laminations shall be toenailed to supports with 20d or larger common nails. Where the supports are 48 inches on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches on center, alternate laminations shall be toenailed to every support. For mechanically laminated decking constructed with laminations of 2-inch nominal thickness, toenailing at supports in accordance with Table 2304.9.3.2 shall be permitted.

Table 2304.9.3.2 Fastening Schedule for Mechanically Laminated Decking Using Laminations of 2-inch Nominal Thickness (new table below without underlining for clarity)

Minimum Nail Size (Length x Diameter) (inches)	Maximum Spacing Between Face Nails ^{a,b} (inches)		Number of Toenails into Supports ^c
	Decking Supports ≤ 48 inches o.c.	Decking Supports > 48 inches o.c.	
4 x 0.192	30	18	1
4 x 0.162	24	14	2
4 x 0.148	22	13	2
3½ x 0.162	20	12	2
3½ x 0.148	19	11	2
3½ x 0.135	17	10	2
3 x 0.148	11	7	2
3 x 0.128	9	5	2
2¾ x 0.148	10	6	2
2¾ x 0.131	9	6	3
2¾ x 0.120	8	5	3

- a. Nails shall be driven perpendicular to the lamination face, alternating between top and bottom edges.
- b. Where nails penetrate through two laminations and into the third, they shall be staggered one-third of the spacing in adjacent laminations. Otherwise, nails shall be staggered one-half of the spacing in adjacent laminations.
- c. Where supports are 48 inches on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches on center, alternate laminations shall be toenailed to every support.

S281-16 AM
(continued)

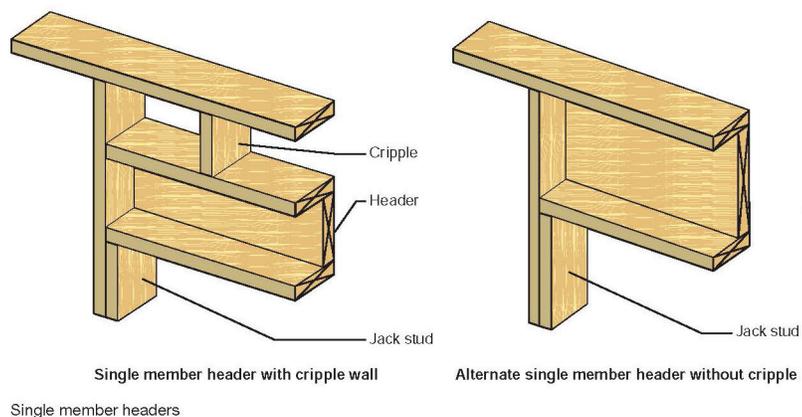
S292-16 AS

2308.5.5.1 Openings in exterior bearing walls. Headers shall be provided over each opening in exterior bearing walls. The size and spans in Table 2308.4.1.1(1) are permitted to be used for one- and two-family dwellings. Headers for other buildings shall be designed in accordance with Section 2301.2, Item 1 or 2. Headers shall be of two or more pieces of nominal 2-inch framing lumber set on edge as shall be permitted by in accordance with Table 2308.4.1.1(1) and nailed together in accordance with Table 2304.10.1 or of solid lumber of equivalent size.

S292-16 AS
(continued)

Single member headers of nominal 2-inch thickness shall be framed with a single flat 2-inch-nominal member or wall plate not less in width than the wall studs on the top and bottom of the header in accordance with Figures 2308.5.5.1(1) and 2308.5.5.1(2) and face nailed to the top and bottom of the header with 10d box nails [3 inches × 0.128 inches] spaced 12 inches on center.

Wall studs shall support the ends of the header in accordance with Table 2308.4.1.1(1). Each end of a lintel or header shall have a bearing length of not less than 1½ inches for the full width of the lintel.



**FIGURE 2308.5.5.1(1) Single Member Header in Exterior Bearing Wall and
FIGURE 2308.5.5.1(2) Alternative Single Member Header Without Cripple**

Code change jargon explained:

ADM###-16 XX or FS###-15 XX – this is a specific, unique code change from either the 2015 or the 2016 hearing cycle. The last two to four characters describe whether the code change was accepted by the committee reviewing the code change: (1) as submitted, (2) as modified by the committee, or (3) as modified at the public comment hearing.

AS – Code change approved as originally written and submitted

AM – Code change modified by the committee

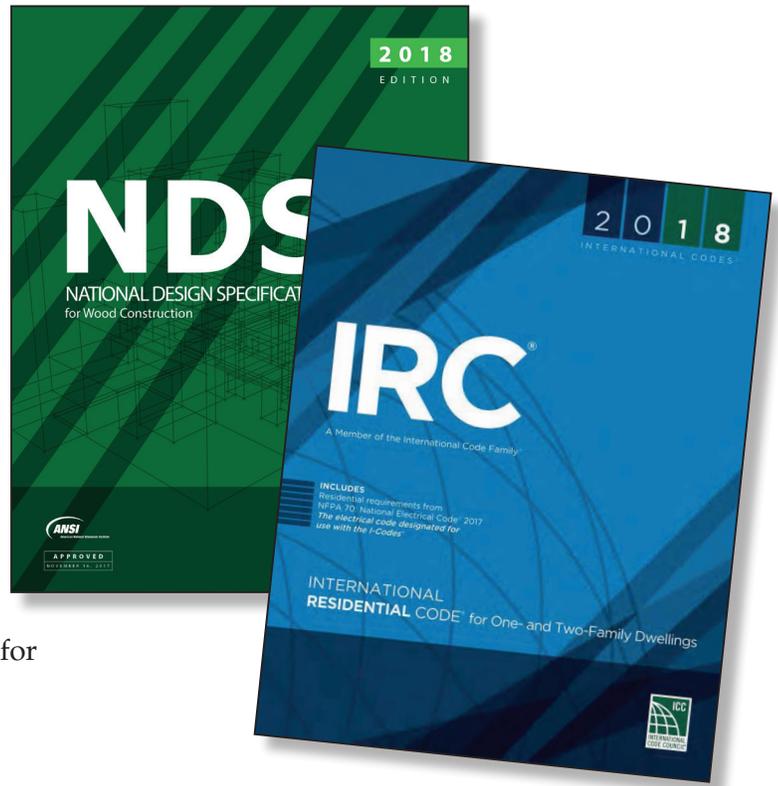
AMPC – Code change modified by public comment at the public comment hearings

2018 International Residential Code Changes Related to Wood Construction

John “Buddy” Showalter, P.E., Loren Ross, P.E., and Sandra Hyde, P.E.

Introduction

The 2018 International Residential Code (IRC) was approved by the International Code Council (ICC) during their 2015/2016 code development cycle. This article outlines changes to the IRC as they relate to wood construction. Accompanying discussion of each change is the ICC code change tracking number [bracketed] that can be used to search for more information regarding the change on the ICC website (iccsafe.org), including the reason the proponent offered for the change and any modifications made during the hearing process. The Appendix to this paper, beginning on page 22, contains a strikethrough/underline format of changes where it is deemed helpful for understanding the code changes outlined herein.



Referenced Standards

References to code-referenced standards are updated to reflect the most recent editions [ADM94-16]. The 2018 editions of the AWC *National Design Specification*® (NDS®) for Wood Construction and the *Wood Frame Construction Manual (WFCM) for One-and-Two Family Dwellings* were approved.

The 2015 *Permanent Wood Foundation Design Specification* is still referenced in 2018 IRC.

The following updated APA-The Engineered Wood Association standards were also approved for reference:

- ANSI A190.1-2017 Structural Glued Laminated Timber

- ANSI/APA PRG-320-2017 Standard for Performance-Rated Cross-Laminated Timber
- ANSI/APA PRP 210-2014 Standard for Performance-Rated Engineered Wood Siding
- ANSI/APA PRR 410-2016 Standard for Performance-Rated Engineered Wood Rim Boards

Approved Agencies

Product certification report writing agencies were introduced into the definition of Approved Agency. [ADM6-16 AM]

Fasteners and Framing

Most changes are not shown in detail in Appendix A for brevity.

- Tables R602.3(1) Fastening Schedule and R602.10.3(4) Seismic Adjustment Factors to the Required Length

KEYWORDS: fasteners, wall bracing, decks, sprinklers, span tables

of Wall Bracing (RB219-16) have been modified to correct the 10d common nail length, remove redundant requirements for stud nailing, and create consistency in the IRC for roof sheathing attachment.

- Roof Sheathing Ring Shank nails have been added to Table R602.3(1) Fastening Schedule with the designation RSRS-01 (2-3/8" x 0.113") as an option for roof sheathing attachment. A new Footnote j references ASTM F 1667 *Standard Specification for Driven Fasteners: Nails, Spikes, and Staples* [RB220-16].
- Footnote f of the spacing of roof sheathing fasteners at roof edges, eaves, and ridges in Table R602.3(1) Fastening Schedule was modified for conformity with wind load design provisions in *ASCE 7-10 Minimum Design Loads for Buildings and Other Structures*, and in R802.5.2.1 unsupported cantilever roof sheathing is limited to 9 inches beyond gable end framing [RB221-16].
- Tables for interior and exterior wall girder and header spans were revised to reflect Southern Pine No. 2 instead of Southern Pine No. 1 design values in IRC Tables R602.7(1) and R602.7(2). Revised spans also distinguish between spans for dropped versus raised headers with footnotes [RB226-16 and RB227-16].
- A technical error in Figure R602.7.2 for rim board header construction was corrected and the construction detail call-outs were improved [RB228-16].
- The number of full height studs required to be provided at openings was reduced to correct unnecessary conservatism and the associated Table R602.7.5 Minimum Number of Full Height Studs at Each End of Headers in Exterior Walls was simplified [RB229-16].
- The nail size for continuous structural fiberboard (SFB) sheathing in the wall bracing Table R602.10.4 [RB240-16] was modified to remove the 8d common nail size no longer recommended for use in wall bracing applications.
- A redundant footnote, footnote (f), was removed from IRC Table R802.5.2 Rafter/Ceiling Joist Heel Joint Connections [RB319-16].

Fire Resistance and Sprinklers

- Rake overhang and eave fire-resistance rating requirements are clarified in IRC R302.1 [RB30-16 AM].
- Use of IBC Section 703.3 is now permitted as an alternative to testing for establishing exterior wall and common wall fire-resistance ratings in townhouses and two-family dwellings. New references are made in IRC Tables R302.1(1) and R302.1(2) for exterior walls, and Sections R302.2 and R302.3 for townhouses and two-family dwellings, respectively [RB32-16 AM].
- Clarification of townhouse separation with two one-hour walls instead of one common two-hour wall was added in IRC R302.2 [RB44-16 AM].
- Electric heating appliances were added to an exception in IRC R302.13 requiring floors above crawl spaces containing fuel-fired appliances to be membrane-protected. With the modification, floors above crawl spaces with electric heating appliances will no longer be exempt, but must be protected similar to crawl spaces with fuel-fired appliances [RB68-16 AMPC1].

Structural

- References to *ANSI 117-2015 Standard Specifications for Structural Glued Laminated Timber of Softwood Species* are updated [RB189-16].
- Floor framing bearing details in IRC R502.6 for balloon framing are clarified [RB192-16 AM].
- Decks
 - o The order of prescriptive deck provisions is reorganized in IRC R507 [RB198-16].
 - o Prescriptive details for materials and flashing were added, including a new table for fastener specification [RB202-16 AM].
 - o New footing provisions were added, with a new table for footing sizes, including exceptions for freestanding decks without footings where joists bear directly on grade or on precast concrete pier blocks, revised footing diagrams, and a caution about footings in problem or questionable soils [RB205-16, RB206-16, RB207-16, RB208-16, RB213-16, and RB214-16].

- o Post height provisions were slightly revised, and 8x8 posts have been included [RB212-16].
- o Beam support and connection requirements are clarified [RB200-16].
- o Deck joist span table and diagrams were revised, reflecting in part the AWC *DCA-6 Prescriptive Residential Wood Deck Construction Guide*, notably with a modification to clarify maximum cantilever spans [RB210-16].
- o A general provision for acceptance of alternative decking materials and fastening in accordance with the manufacturer's installation instructions was added [RB209-16 AMPC1].
- o Provisions for deck connection to the main structure (ledger connections) and the transmission of lateral loads were clarified [RB203-16].
- A new Table R602.3(6) for exterior load-bearing tall stud walls was added [RB218-16 AM].
- The application of wall bracing tables was clarified, adding horizontal blocking as an item number for wall bracing length adjustments for wind and seismic, and adding alternate braced wall (ABW), portal frame with hold-downs (PFH), and portal frame at garage (PFG) bracing methods to the seismic bracing table [RB230-16 AM, RB231-16, RB234-16 AM, RB235-16 AMPC2, RB237-16, RB241-16 AM] in IRC R602.10. Due to the nature of the changes to tables, only portions of the text changes are shown in Appendix A.
- New provisions require that vinyl over foam be installed over backing able to resist wind forces, or the vinyl be designed for wind pressures using the loads specified in Chapter 3 and Table R703.11.2, or the manufacturer's design wind pressure rating if provided [RB305-16 AM].
- Roof framing provisions are rewritten and reorganized, and now include the use of low slope roof rafters in IRC R802 [RB310-16 AM].
- ASTM D 5055 *Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists* is added as a reference for establishment of design properties for wood I-joists [RB315-16].

Conclusion

The *2018 IRC* is available from ICC (www.iccsafe.org) and represents the state-of-the-art for design and construction of buildings within its scope. In addition to referencing new standards such as the *2018 NDS* and *2018 WFCM*, other changes to wood provisions reflect the latest available information at time of code development. In some situations, a building designer may want to use a more up-to-date code provision or consensus standard than is recognized in the building code adopted by a jurisdiction. In those cases, building officials, in accordance with Section R104.11 of the *IRC*, are permitted to accept designs prepared in accordance with newer consensus reference standards. IRC Section R104.11 allows a jurisdiction to accept new technologies in materials and building construction provided documentation is provided to the jurisdiction that demonstrate equivalency in quality, strength, durability and safety.

Citation

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Loren Ross, P.E. is Manager of Engineering Research and John "Buddy" Showalter, P.E. is Vice President of Technology Transfer for the American Wood Council (AWC). Sandra Hyde, P.E. is Senior Staff Engineer with the International Code Council. Contact Mr. Showalter (bshowalter@awc.org) with questions.

**Appendix: 2018 IRC Changes Related to Wood Construction –
Strikethrough/Underline Format**

ICC Code Change Tracking Number	Strikethrough/Underline Text
ADM6-16 AM	<p>SECTION 202 DEFINITIONS APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests, or furnishing inspection services, <u>or furnishing product certification, where such agency and</u> has been approved by the building official.</p>
RB30-16 AM (table unchanged – only footnotes for fire-resistance rated projections revised)	<p>TABLE R302.1 (1) EXTERIOR WALLS a. Roof eave <u>The</u> fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave <u>overhang</u> if fireblocking is provided from the wall top plate to the underside of the roof sheathing. b. Roof eave <u>The</u> fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave rake <u>overhang where</u> provided that gable vent openings are not installed.</p> <p>TABLE R302.1 (2) EXTERIOR WALLS – DWELLINGS WITH FIRE SPRINKLERS b. Roof eave <u>The</u> fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave <u>overhang</u> if fireblocking is provided from the wall top plate to the underside of the roof sheathing. c. Roof eave <u>The</u> fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the <u>eave rake overhang where</u> provided that gable vent openings are not installed.</p>
RB44-16 AM	<p><u>R302.2 Townhouses.</u> Walls separating townhouse units shall be constructed in accordance with Section R302.2.1 or Section R302.2.2.</p> <p><u>R302.2.1 Double Walls.</u> Each townhouse shall be separated by two 1-hour fire-resistance rated wall assemblies tested in accordance with ASTM E119, UL 263 or Section 703.3 of the International Building Code.</p> <p>R302.2 <u>R302.2.2 Townhouses. Common Walls.</u> (unchanged except the following)</p> <ol style="list-style-type: none"> 1. Where a fire sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119, or <u>UL 263 or Section 703.3 of the International Building Code.</u> 2. Where a fire sprinkler system in accordance with Section P2904 is not provided, the common wall shall be not less than a 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119, or <u>UL 263 or Section 703.3 of the International Building Code.</u>

RB68-16 AMPC1	<p>R302.13 Fire protection of floors. Floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a 1/2-inch gypsum wallboard membrane, 5/8-inch wood structural panel membrane, or equivalent on the underside of the floor framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaires, wires, speakers, drainage, piping and similar openings or penetrations shall be permitted.</p> <p>Exceptions: (all unchanged except #2) 2. Floor assemblies located directly over a crawl space not intended for storage or <u>for the installation of fuel-fired or electric-powered heating appliances.</u></p>				
RB192-16 AM	<p>R502.6 Bearing. The ends of each joist, beam or girder shall have not less than 1-1/2 inches of bearing on wood or metal, have not less than 3 inches of bearing on masonry or concrete <u>or be supported by approved joist hangers. Alternatively, the ends of joists shall be supported on a 1-inch by 4-inch ribbon strip and shall be nailed to the adjacent stud.</u> The bearing on masonry or concrete shall be direct, or a sill plate of 2-inch-minimum nominal thickness shall be provided under the joist, beam or girder. The sill plate shall provide a minimum nominal bearing area of 48 square inches.</p>				
RB198-16 AS	New Section			Old Section	
	R507.1	Decks	Reference to Section 301 for conditions not described in R507. Move attachment criteria to new Section R507.8	R507.1	Decks
	R507.2	Materials	New		
	R507.2.1	Wood Materials	New		
	R507.2.2	Plastic composite deck boards, stairs treads, guards, or handrails	Renumbering of all Sections and Sub-sections in R507.3 to R507.2	R507.3	Plastic composite deck boards, stairs treads, guards, or handrails
	R507.2.3	Fasteners and Connectors	New		
R507.3	Deck footings	Creates reference to Section R403.1.4 for footing depth and new table for minimum footing size	NA	NA	

	New Section			Old Section	
	R507.4	Deck posts	Renumbering	R507.8	Deck posts
R507.4.1	Deck post to deck footing	Renumbering	R507.8.1	Deck post to deck footing	
R507.5	Deck Beams	Renumbering and clarification	R507.6	Deck Beams	
R507.5.1	Deck post to deck beam	Renumbering and clarification	R507.7.1	Deck post to deck beam	
R507.6	Deck Joists	Renumbering and clarification	R507.5	Deck Joists	
R507.6.1	Lateral restraint at supports	Renumbering	R507.5.1	Lateral restraint at supports	
R507.6.2	Deck joist and deck beam bearing	Renumbering	R507.7	Deck joist and deck beam bearing	
R507.7	Decking	Renumbering	R507.4	Decking	
R507.8	Vertical and lateral supports	Moving attachment to house criteria from previous R507.1	R507.1	Decks	
R507.9	Vertical and lateral support at band joists	Renumbering	R507.1, R507.2	Decks, Deck ledger connection	
R507.9.1	Vertical supports	Creates introductory section	NA	NA	
R507.9.1.1	Ledger details	Renumbering and language simplification	R507.2.1	Ledger details	
R507.9.1.2	Band joist details	Renumbering and language simplification	R507.2.2	Band joist details	
R507.9.1.3	Ledger to band joist fastener details	Renumbering and language simplification	R507.2.3	Ledger to band joist fastener details	
R507.9.1.4	Alternate ledger details	Renumbering	R507.2	Deck ledger connection	
R507.9.2	Deck lateral load connection	Renumbering and language simplification	R507.2.4	Deck lateral load connection	

RB198-16 AS
(continued)

<p>RB200-16 AMPC1</p>	<p>R507.6 R507.5 Deck Beams. ...Beams shall be permitted to cantilever at each end up to one-fourth of the <u>actual allowable beam span</u>. <u>Splices Deck beams of multispans beams other materials shall be located at interior post locations permitted where designed in accordance with accepted engineering practices.</u></p> <p>R507.7 R507.5.1 Deck joist and deck beam bearing. ...Joist framing into the side of a ledger board or beam shall be supported by approved joist hangers. <u>Joists Where multispans beams bear on intermediate posts, each ply must have full bearing on a beam shall be connected to the beam to resist lateral displacement the post in accordance with Figures R507.5.1(1) and R507.5.1(2).</u></p> <p>R507.7.1 R507.5.2 Deck post beam connection to deck beam supports. Deck beams shall be attached to <u>deck posts supports in a manner capable of transferring vertical loads and resisting horizontal displacement. Deck beam connections to wood posts shall be in accordance with Figure R507.7.1 or by other equivalent means capable to resist lateral displacement Figures R507.5.1(1) and R507.5.1(2).</u> Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the head and nut. Exception: Where deck beams bear directly on footings in accordance with Section R507.8.1.</p> <p>Table R507.6 DECK BEAM SPAN LENGTHS Adds single-ply 2x6 to 2x12 beam options for Southern pine and adds footnote g to title. <u>g. Beam cantilevers are limited to the adjacent beam’s span divided by 4.</u></p> <p>Figure R507.7.1 R507.5.1(1) DECK BEAM TO DECK POST Replaces figure to now show splice requirements.</p> <p>FIGURE R507.5.1(2) NOTCHED POST-TO-BEAM CONNECTION Adds figure showing connection dimension requirements.</p> <p>FIGURE R507.6 R507.5 TYPICAL DECK BEAM SPANS Replaces figure to show multispans beam spans.</p>
<p>RB202-16 AM</p>	<p>R507.2 Materials. <u>Materials used for the construction of decks shall comply with this section.</u></p> <p>R507.2.1 Wood materials. <u>Wood materials shall be No.2 grade or better lumber, preservative-treated in accordance with Section R317 or approved, naturally durable lumber, and termite protected where required in accordance with Section R318. Where design in accordance with Section R301 is provided, wood structural members shall be designed using the wet service factor defined in AWC NDS. Cuts, notches, and drilled holes of preservative treated wood members shall be treated in accordance with Section R317.1.1. All preservative-treated wood products in contact with the ground shall be labeled for such usage.</u></p>

RB202-16 AM
(continued)

R507.2.1.1 Engineered wood products. Engineered wood products shall be in accordance with Section R502.

R507.2.3 Fasteners and connectors. Metal fasteners and connectors used for all decks shall be in accordance with Section R317.3 and Table R507.2.3.

TABLE R507.2.3 FASTENER AND CONNECTOR SPECIFICATIONS FOR DECKS ^{a,b}

Item	Material	Minimum Finish/Coating	Alternate Finish/Coating ^e
Nails and timber rivets	In accordance with	Hot-dipped galvanized per ASTM A153	Stainless steel, silicon bronze or copper
Bolts ^c Lag screws ^d (including nuts and washers)	In accordance with ASTM A307 (bolts), ASTM A563 (nuts), ASTM F844 (washers)	Hot-dipped galvanized per ASTM A153, Class C (Class D for $\frac{3}{8}$ -inch diameter and less) or mechanically galvanized per ASTM B695, Class 55 or 410 stainless steel	Stainless steel, silicon bronze or copper
Metal connectors	Per manufacturer's specification	ASTM A653 type G185 zinc coated galvanized steel or post hot-dipped galvanized per ASTM A123 providing a minimum average coating weight of 2.0 oz./ft ² (total both sides)	Stainless steel

NOTES

- a. Equivalent materials, coatings and finishes shall be permitted.
- b. Fasteners and connectors exposed to salt water or located within 300 feet of a salt water shoreline shall be stainless steel.
- c. Holes for bolts shall be drilled a minimum $\frac{1}{32}$ " and a maximum $\frac{1}{16}$ " larger than the bolt.
- d. Lag screws $\frac{1}{2}$ " and larger shall be predrilled to avoid wood splitting per National Design Specification (NDS) for Wood Construction.
- e. Stainless steel driven fasteners shall be in accordance with ASTM F 1667.

R507.2.4 Flashing. Flashing shall be corrosion-resistant metal of minimum nominal 0.019 inch thickness or approved nonmetallic material that is compatible with the substrate of the structure and the decking materials.

R507.2.5 Alternate materials. Alternate materials, including glass and metals shall be permitted.

<p>RB203-16 AS</p>	<p>R507.2 R507.9 Deck ledger connection to Vertical and lateral supports at band joist. Deck ledger connections to band joists <u>Vertical and lateral supports for decks shall be in accordance comply with this section, Tables R507.2 and R507.2.1, and Figures R507.2.1(1) and R507.2.1(2).</u> For other grades, species, connection details and loading conditions, deck ledger connections shall be designed in accordance with Section R301.</p> <p>R507.9.1 Vertical supports. Vertical loads shall be transferred to the band joists with ledgers in accordance with this section.</p> <p>R507.2.1 R507.9.1.1 Ledger details. Deck ledgers installed in accordance with Section R507.2 shall be a minimum 2-inch by 8-inch nominal, pressure-preservative-treated Southern pine, incised pressure-preservative-treated Hem-fir, or approved, naturally durable, No. 2 grade or better lumber. Deck ledgers installed in accordance with Section R507.2 shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on stone or masonry veneer.</p> <p>R507.2.2 R507.9.1.2 Band joist details. Band joists attached by supporting a ledger in accordance with Section R507.2 shall be a minimum 2-inch nominal, solid-sawn, spruce-pine-fir or better lumber or a minimum 1-inch by 9½-inch dimensional, Douglas fir or better, laminated veneer lumber. Band joists attached by a ledger in accordance with Section R507.2 shall be <u>bear fully supported by a wall or sill plate below on the primary structure capable of supporting all required loads.</u></p> <p>R507.2.3 R507.9.1.3 Ledger to band joist fastener details. Fasteners used in deck ledger connections in accordance with Table R507.2 R507.9.1.3(1) shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with Table R507.2.1 R507.9.1.3(2) and Figures R507.2.1(1) R507.9.1.3(1) and R507.2.1(2) R507.9.1.3(2).</p> <p>R507.9.1.4 Alternate ledger details. Alternate framing configurations supporting a ledger constructed to meet the load requirements of Section R301.5 shall be permitted.</p>
<p>RB205-16 AM, RB206-16 AS, RB207-16 AS, RB208-16 AS, RB213-16 AS, RB214-16 AS</p>	<p>R507.3 Footings. Decks shall be supported on concrete footings or other approved structural systems designed to accommodate all loads in accordance with Section R301. Deck footings shall be sized to carry the imposed loads from the deck structure to the ground as shown in Figure R507.3. The footing depth shall be in accordance with Section R403.1.4.</p> <p>Exception: Free-standing decks consisting of joists directly supported on grade over their entire length.</p> <p>R507.3.1 Minimum size. The minimum size of concrete footings shall be in accordance with Table R507.3.1, based on the tributary area and allowable soil-bearing pressure in accordance with Table R401.4.1.</p>

<p>RB205-16 AM, RB206-16 AS, RB207-16 AS, RB208-16 AS, RB213-16 AS, RB214-16 AS (continued)</p>	<p>R507.3.2 Minimum depth. Deck footings shall extend below the frost line specified in <u>Table R301.2(1) in accordance with Section R403.1.4.1.</u></p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. <u>Free-standing decks that meet all of the following criteria:</u> <ol style="list-style-type: none"> 1.1. <u>The joists bear directly on precast concrete pier blocks at grade without support by beams or posts.</u> 1.2. <u>The area of the deck does not exceed 200 square feet.</u> 1.3. <u>The walking surface is not more than 20 inches above grade at any point within 36 inches measured horizontally from the edge.</u> 2. <u>Free-standing decks need not be provided with footings that extend below the frost line.</u> <p>R507.4.1 Deck post to deck footing connection. Where posts shall bear on concrete footings in accordance with Section R403 and <u>Figure R507.34.1, Posts shall be restrained to prevent lateral displacement at the bottom support.</u> Such lateral restraint shall be provided by manufactured connectors installed in accordance with Section R507 and the manufacturers' instructions or a minimum post embedment of 12 inches in surrounding soils or concrete piers. <u>Other footing systems shall be permitted.</u></p> <p>Exception: <u>Where expansive, compressible, shifting or other questionable soils are present, surrounding soils shall not be relied on for lateral support.</u></p>
<p>RB209-16 AMPC1</p>	<p>R507.4 R507.7 Decking. Maximum allowable spacing for joists supporting decking shall be in accordance with <u>Table R507.4 R507.7.</u> Wood decking shall be attached to each supporting member with not less than two 8d threaded nails or two No. 8 wood screws. <u>Other approved decking or fastener systems shall be installed in accordance with the manufacturer's installation requirements.</u></p> <p>TABLE R507.4 R507.7 MAXIMUM JOIST SPACING FOR DECKING Adds Decking to the header of all three columns.</p>
<p>RB210-16 AS</p>	<p>R507.5 R507.6 Deck joists. Maximum allowable spans for wood deck joists, as shown in <u>Figure R507.5 R507.6,</u> shall be in accordance with <u>Table R507.5 R507.6.</u> <u>Deck joists The maximum joist spacing shall be permitted to limited by the decking material in accordance with Table R507.7. The maximum joist cantilever shall be limited to not greater than one-fourth of the actual, adjacent joist span or the maximum cantilever length specified in Table R507.6, whichever is less.</u></p> <p>R507.7 R507.6.1 Deck joist and deck beam bearing. The ends of each joist and beam <u>joists shall have not less than 1½ inches of bearing on wood or metal and not less than 3 inches on concrete or masonry for the over its entire width. Joists bearing on top of the a multiple-ply beam or ledger shall be fastened in accordance with Table R602.3(1). Joists bearing on top of a single ply beam or ledger shall be attached by a mechanical connector. Joist framing into the side of a beam or ledger board or beam shall be supported by approved joist hangers. Joists bearing on a beam shall be connected to the beam to resist lateral displacement.</u></p>

R507.5.1 R507.6.2 Lateral Deck joist lateral restraint at supports.

TABLE R507.5 R507.6 DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft.-in.)

SPECIES ^a	SIZE	ALLOWABLE JOIST SPAN ^b			MAXIMUM CANTILEVER ^{c,f}		
		SPACING OF DECK JOISTS (inches)			SPACING OF DECK JOISTS WITH CANTILEVERS (inches)		
		12	16	24	12	16	24
Southern pine	2 x 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 x 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 x 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 x 12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch^d hem-fir^d spruce-pine-fir^d	2 x 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 x 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 x 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 x 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine^e, red pine^e	2 x 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 x 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 x 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 x 12	17-5	15-1	12-4	3-10	3-9	3-1

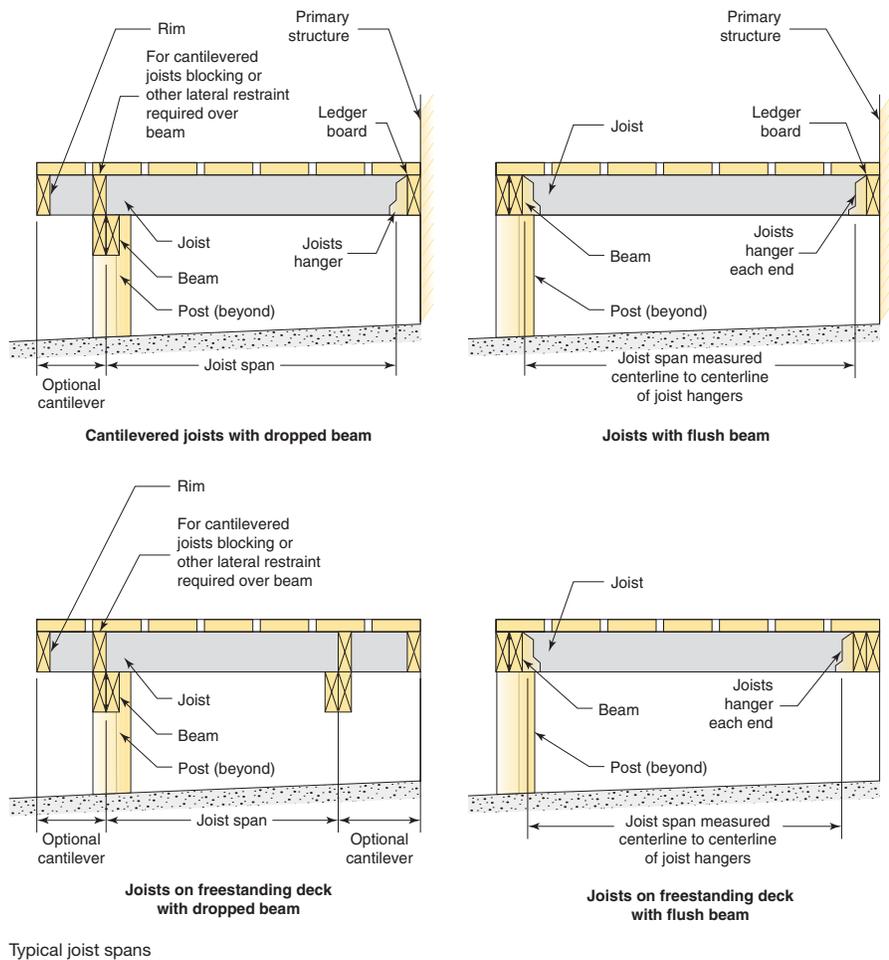
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

- a. No. 2 grade with wet service factor.
- b. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360.
- c. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied to end.
- d. Includes incising factor.
- e. Northern species with no incising factor.
- f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

RB210-16 AS
(continued)

RB210-16 AS
(continued)

FIGURE R507.5 R507.6



R507.8 R507.4 Deck posts. For single-level wood-framed decks with beams sized in accordance with Table R507.6 R507.5, deck post size shall be in accordance with Table R507.8 R507.4.

TABLE R507.8 R507.4 DECK POST HEIGHT ^a

DECK POST SIZE	MAXIMUM HEIGHT ^b (feet-inches)
4 x 4	6-9 ^c
4 x 6	8
6 x 6	14
8 x 8	14

Notes:

a. Measured to the underside of the beam.

b. Based on 40 psf live load.

c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.

RB212-16 AS

RB212-16 AS
(continued)

R507.8.1 R507.4.1 Deck post to deck footing connection. Where posts bear on concrete footings in accordance with Section R403 and Figure R507.8.1 R507.4.1, Posts shall be restrained to prevent lateral displacement at the bottom support. Such lateral restraint shall be provided by manufactured connectors installed in accordance with Section R507 and the manufacturers' instructions or a minimum post embedment of 12 inches in surrounding soils or concrete piers. Other footing systems shall be permitted.

RB218-16 AM

R602.3.1 Stud size, height and spacing. The size, height and spacing of studs shall be in accordance with Table R602.3(5).

Exceptions: (unchanged except new #3)

3. Exterior load-bearing studs not exceeding 12 feet in height provided in accordance with Table R602.3(6). The minimum number of full height studs adjacent to openings shall be in accordance with Section R602.7.5. The building shall be located in Exposure B, the roof live load shall not exceed 20 psf, and the ground snow load shall not exceed 30 psf. Studs and plates shall be No. 2 grade lumber or better.

TABLE R602.3(6) ALTERNATE WOOD BEARING WALL STUD SIZE, HEIGHT AND SPACING

STUD HEIGHT	SUPPORTING	STUD SPACING ^a	ULTIMATE DESIGN WIND SPEED					
			115 mph		130 mph ^b		140 mph ^b	
			Maximum roof/floor span ^c		Maximum roof/floor span ^c		Maximum roof/floor span ^c	
			12 ft.	24 ft.	12 ft.	24 ft.	12 ft.	24 ft.
11 ft.	Roof Only	12 in.	2 × 4	2 × 4	2 × 4	2 × 4	2 × 4	2 × 4
		16 in.	2 × 4	2 × 4	2 × 4	2 × 6	2 × 4	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
11 ft.	Roof and One Floor	12 in.	2 × 4	2 × 6	2 × 4	2 × 6	2 × 4	2 × 6
		16 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
12 ft.	Roof Only	12 in.	2 × 4	2 × 4	2 × 4	2 × 6	2 × 4	2 × 6
		16 in.	2 × 4	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
12 ft.	Roof and One Floor	12 in.	2 × 4	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		16 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6
		24 in.	2 × 6	2 × 6	2 × 6	2 × 6	2 × 6	DR

DR = Design Required.

- a. Wall studs not exceeding 16 inches on center shall be sheathed with minimum ½-inch gypsum board on the interior and ¾-inch wood structural panel sheathing on the exterior. Wood structural panel sheathing shall be attached with 8d nails not greater than 6 inches on center along panel edges and 12 inches on center at intermediate supports, and all panel joints shall occur over studs or blocking.
- b. Where the ultimate design wind speed exceeds 115 mph, studs shall be attached to top and bottom plates with connectors having a minimum 300-pound lateral capacity.
- c. The maximum span is applicable to both single- and multiple-span roof and floor conditions. The roof assembly shall not contain a habitable attic.

RB221-16 AM

Table R602.3(1) FASTENING SCHEDULE

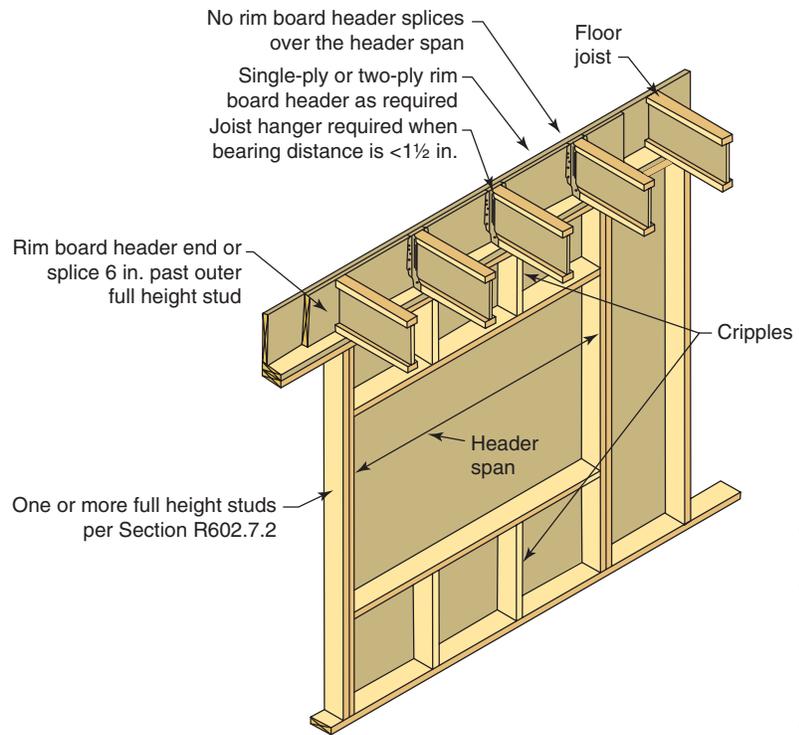
f. For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 6 inches on center where the ultimate design wind speed is less than 130 mph and shall be spaced 4 inches on center where the ultimate design wind speed is 130 mph or greater but less than 140 mph.

f. Where the ultimate design wind speed is 130 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. Where the ultimate design wind speed is greater than 130 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.

R803.2.3 Installation. Wood structural panel used as roof sheathing shall be installed with joints staggered or not staggered in accordance with Table R602.3(1), APA E30 for wood roof framing or with Table R804.3 for cold-formed steel roof framing. Wood structural panel roof sheathing in accordance with Table R503.2.1.1(1) shall not cantilever more than 9 inches beyond the gable endwall unless supported by gable overhang framing.

RB228-16 AS

IRC Figure R602.7.2 RIM BOARD HEADER CONSTRUCTION



Rim board header construction

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TABLE R602.7.5 MINIMUM NUMBER OF FULL-HEIGHT STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS^a

MAXIMUM HEADER SPAN (feet)	ULTIMATE DESIGN WIND SPEED AND EXPOSURE CATEGORY	
	< 140 mph, Exposure B or < 130 mph, Exposure C	≤ 115 mph, Exposure B ^b
4	1	1
6	2	1
8	2	1
10	3	2
12	3	2
14	3	2
16	4	2
18	4	2

RB229-16 AS

- a. For header spans between those given, use the minimum number of full height studs associated with the larger header span.
- b. The tabulated minimum number of full-height studs is applicable where jack studs are provided to support the header at each end in accordance with Table R602.7(1). Where a framing anchor is used to support the header in lieu of a jack stud in accordance with Note d of Table R602.7(1), the minimum number of full-height studs at each end of a header shall be in accordance with requirements for wind speed < 140 mph, Exposure B.

R602.10.4.4 Panel joints. Vertical joints of panel sheathing shall occur over and be fastened to common studs. Horizontal joints of panel sheathing in *braced wall panels* shall occur over and be fastened to common blocking of a thickness of 1½ inches or greater.

TABLE R602.10.3(3) BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

RB230-16 AM,
RB231-16 AS,
RB234-16 AM,
RB235-16 AMPC2,
RB237-16 AS,
RB241-16 AM

- e. Methods PFG and CS-SFB do not apply in Seismic Design Categories D₀, D₁ and D₂.
- f. Where more than one bracing method is used, mixing methods shall be in accordance with Section R602.10.4.1.

R602.10.4.1 Mixing methods. Mixing of bracing methods shall be permitted as follows:
4. Mixing of continuous sheathing methods CSWSP, CS-G and CS-PF along a *braced wall line* shall be permitted. Intermittent methods ABW, PFH and PFG shall be permitted to be used along a *braced wall line* with continuous sheathed methods, provided that the length of required bracing for that braced wall line is determined in accordance with Table R602.10.3(1) or R602.10.3(3) using the highest value of the bracing methods used.

R703.11.2 Foam Installation over foam plastic sheathing. ~~Vinyl~~ Where vinyl siding and/or insulated vinyl siding used with is installed over foam plastic sheathing, the vinyl siding shall comply with Section R703.11 and shall be installed in accordance with Sections R703.11.2.1, R703.11.2.2 or R703.11.2.3. shall have a design wind pressure resistance complying with Section Table R703.11.2.

Exceptions:

1. Where the foam plastic sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing or other approved backing capable of independently resisting the design wind pressure, the vinyl siding shall be installed in accordance with Sections R703.3.3 and R703.11.1.
2. Where the vinyl siding manufacturer's product specifications provide an approved design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's installation instructions.
3. Where the foam plastic sheathing and its attachment have a design wind pressure resistance complying with Sections R316.8 and R301.2.1, the vinyl siding shall be installed in accordance with Sections R703.3.3 and R703.11.1.

TABLE R703.11.2 ADJUSTED MINIMUM DESIGN WIND PRESSURE REQUIREMENT FOR VINYL SIDING

ULTIMATE DESIGN WIND SPEED (MPH)	ADJUSTED MINIMUM DESIGN WIND PRESSURE (ASD) (PSF) ^{a, b}					
	Case 1: With interior gypsum wallboard ^c			Case 2: Without interior gypsum wallboard ^c		
	Exposure			Exposure		
	B	C	D	B	C	D
110	-44.0	-61.6	-73.1	-62.9	-88.1	-104.4
115	-49.2	-68.9	-81.7	-70.3	-98.4	-116.7
120	-51.8	-72.5	-86.0	-74.0	-103.6	-122.8
130	-62.2	-87.0	-103.2	-88.8	-124.3	-147.4
> 130	Not Allowed ^d					

a. Linear interpolation is permitted.

b. The table values are based on a maximum 30-foot mean roof height and effective wind area of 10 square feet for Wall Zone 5 (corner), and the ASD design wind pressure from Table R301.2(2) multiplied by the following adjustment factors: 2.6 (Case 1) and 3.7 (Case 2) for wind speeds less than 130 mph and 3.7 (Case 2) for wind speeds greater than 130 mph.

c. Gypsum wallboard, gypsum panel product or equivalent.

d. For the indicated wind speed condition, foam sheathing only on the exterior of frame walls with vinyl siding is not allowed unless the vinyl siding complies with an adjusted minimum design wind pressure requirement as determined in accordance with Note b and the wall assembly is capable of resisting an impact without puncture at least equivalent to that of a wood frame wall with minimum 7/16-inch OSB sheathing as tested in accordance with ASTM E1886.

RB-305-16 AM

<p>RB-305-16 AM (continued)</p>	<p>R703.11.2.1 Basic wind speed not exceeding 115 miles per hour and Exposure Category B. Where the ultimate design wind speed does not exceed 115 miles per hour (51 m/s), the exposure category is B and gypsum board, gypsum panel product or equivalent is installed on the side of the wall opposite the foam plastic sheathing, the minimum siding fastener penetration into wood framing shall be 1 1/4 inches (32 mm) using minimum 0.120-inch-diameter (3 mm) nail (shank) with a minimum 0.313-inch diameter head, 16 inches (406 mm) on center. The foam plastic sheathing shall be minimum 1 1/2-inch-thick (12.7 mm) (nominal) extruded polystyrene in accordance with ASTM C 578, 1 1/2-inch-thick (12.7 mm) (nominal) polyisocyanurate in accordance with ASTM C 1289 or 1-inch-thick (25 mm) (nominal) expanded polystyrene in accordance with ASTM C 578.</p> <p>R703.11.2.2 Basic wind speed exceeding 115 miles per hour or Exposure Categories C and D. Where the ultimate design wind speed exceeds 115 miles per hour (51 m/s), the exposure category is C or D, or all conditions of Section R703.11.2.1 are not met, the adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3). The design wind pressure rating of the vinyl siding for installation over solid sheathing as provided in the vinyl siding manufacturer's product specifications shall be adjusted for the following wall assembly conditions:</p> <ol style="list-style-type: none"> 1. For wall assemblies with foam plastic sheathing on the exterior side and gypsum wall board, gypsum panel product or equivalent on the interior side of the wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.39. 2. For wall assemblies with foam plastic sheathing on the exterior side and without gypsum wall board, gypsum panel product or equivalent on the interior side of wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.27. <p>R703.11.2.3 Manufacturer specification. Where the vinyl siding manufacturer's product specifications provide an approved design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's instructions.</p>
<p>RB310-16 AM, RB221-16 AM</p>	<p>R802.2 Design and construction. The framing details required in Section R802 apply to roof and ceiling assembly shall provide continuous ties across the structure to roofs having a minimum slope of three units vertical in 12 units horizontal (25-percent slope) or greater prevent roof thrust from being applied to the supporting walls. <u>Roof-ceilings</u> The assembly shall be designed and constructed in accordance with the provisions of this chapter and Figures R606.11(1), R606.11(2) and R606.11(3) or in accordance with AWC NDS. Components of roof-ceilings shall be fastened in accordance with Table R602.3(1).</p> <p>R802.3 Ridge. A ridge board used to connect opposing rafters shall be not less than 1 inch (nominal) thickness and not less in depth than the cut end of the rafter. <u>Where ceiling joist or rafter ties do not provide continuous ties across the structure, a ridge beam shall be provided and supported on each end by a wall or girder.</u></p> <p>R802.4 Rafters. Rafters shall be in accordance with this section.</p>

RB310-16 AM,
RB221-16 AM
(continued)

R802.5 R802.4.1 Allowable rafter spans Rafter size. Spans for Rafters shall be sized based on the rafter spans in accordance with Tables R802.5.1(1) R802.4.1(1) through R802.5.1(8) R802.4.1(8). Rafter spans shall be measured along the horizontal projection of the rafter. For other grades and species and for other loading conditions, refer to the AWC STJR. The span of each rafter shall be measured along the horizontal projection of the rafter.

R802.3 R802.4.2 Framing details. Rafters shall be framed not more than 1½-inch offset from each other to a ridge board or directly opposite from each other with a collar tie, gusset plate as a tie or ridge strap in accordance with Table R602.3(1). Ridge board Rafters shall be not less than 1-inch (25 mm) nominal thickness and not less nailed to the top wall plates in depth than the cut end of the rafter. At valleys and hips there shall be a valley or hip rafter not less than 2-inch accordance with Table R602.3(1) nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Where unless the roof pitch assembly is less than three units vertical in 12 units horizontal (25-percent slope), structural members that support rafters and ceiling joists, such as ridge beams, hips and valleys, shall be designed as beams required to comply with the uplift requirements of Section R802.11.

R802.4.3 Hips and Valleys. Hip and valley rafters shall be not less than 2-inch nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point.

R802.4.4 Rafter supports. Where the roof pitch is less than 3:12 (25-percent slope), structural members that support rafters, such as ridges, hips and valleys, shall be designed as beams, and bearing shall be provided for rafters in accordance with Section R802.6.

R802.5.1 R802.4.5 Purlins. Installation of purlins to reduce the span of rafters is permitted as shown in Figure R802.5.1 R802.4.5. Purlins shall be sized not less than the required size of the rafters that they support. Purlins shall be continuous and shall be supported by 2-inch by 4-inch braces installed to bearing walls at a slope not less than 45 degrees from the horizontal. The braces shall be spaced not more than 4 feet on center and the unbraced length of braces shall not exceed 8 feet.

R802.4.6 Collar ties. Where collar ties are used to connect opposing rafters, they shall be located in the upper third of the attic space and fastened in accordance with Table R602.3(1). Collar ties shall be not less than 1 inch by 4 inches nominal, spaced not more than 4 feet on center. Ridge straps in accordance with Table R602.3(1) shall be permitted to replace collar ties.

R802.5 Ceiling joists. Ceiling joists shall be continuous across the structure or securely joined where they meet over interior partitions in accordance with Table R802.5.2 R802.5.1(9).

R802.4 R802.5.1 Allowable Ceiling joist spans size. Spans for Ceiling joists shall be sized based on the joist spans in accordance with Tables R802.4(1) R802.5.1(1) and R802.4(2) R802.5.1(2). For other grades and species and for other loading conditions, refer to the AWC STJR.

RB310-16 AM,
RB221-16 AM
(continued)

R802.3.1 R802.5.2 Ceiling joist and rafter connections. Ceiling joists and rafter connections. Where ceiling joists and rafter connections are used, they shall be nailed connected to each other in accordance with Table R802.5.1(9), and the rafter shall be nailed to rafters at the top wall plate in accordance with Table R602.3(1) R802.5.2. Ceiling joists shall be continuous or securely joined in accordance with Table R802.5.1(9) where they meet over interior partitions and are nailed to adjacent rafters to provide a continuous tie across the building where such joists are parallel to the rafters.

Where ceiling joists are not connected to the rafters at the top wall plate, joists connected higher in the attic shall be installed as rafter ties, or rafter ties they shall be installed to provide a continuous tie in the bottom third of the rafter height in accordance with Figure R802.4.5 and Table R802.5.2. Where the ceiling joists are installed above the bottom third of the rafter height, the ridge shall be designed as a beam. Where ceiling joists do not run parallel to rafters, rafter ties shall be installed. Rafter ties shall be not less than 2 inches by 4 inches (51 mm by 102 mm) (nominal), installed in accordance with the connection requirements in Table R802.5.1(9), or connections of equivalent capacities shall be provided. Where ceiling joists or rafter ties are not provided, the ridge formed by these rafters shall be supported by a wall or girder designed in accordance with accepted engineering practice. Collar ties or ridge straps to resist wind uplift the ceiling joists shall be connected in to the upper third of the attic space top plates in accordance with Table R602.3(1). Collar ties Each rafter shall be not less than 1 inch by 4 inches (25 mm by 102 mm) (nominal), spaced not more than 4 feet (1219 mm) on center tied across the structure with a rafter tie or a 2-inch x 4-inch kicker connected to the ceiling diaphragm with nails equivalent in capacity to Table R802.5.2.

R802.3.2 R802.5.2.1 Ceiling joists lapped. Ends of ceiling joists shall be lapped not less than 3 inches (76 mm) or butted over bearing partitions or beams and toenailed to the bearing member. Where ceiling joists are used to provide resistance to rafter thrust, lapped joists shall be nailed together in accordance with Table R802.5.1(9) R802.5.2 and butted joists shall be tied together in a manner to resist such thrust. Joists that do not resist thrust shall be permitted to be nailed in accordance with Table R602.3(1). Wood structural panel roof sheathing, in accordance with Table R503.2.1.1(1), shall not cantilever more than 9 inches beyond the gable endwall unless supported by gable overhang framing.

R802.5.2.2 Rafter ties. Wood rafter ties shall be not less than 2 inches by 4 inches installed in accordance with Table R802.5.2 at each rafter. Other approved rafter tie methods shall be permitted.

R802.3.3 R802.5.2.3 Blocking. Blocking shall be not less than utility grade lumber.

Related changes

1. Renumbered the following tables:

- R802.4(1) as R802.5.1(1) - no change to table.
- R802.4(2) as R802.5.1(2) - no change to table.
- R802.5.1(1) as R802.4.1(1) - no change to table.
- R802.5.1(2) as R802.4.1(2) - no change to table.
- R802.5.1(3) as R802.4.1(3) - no change to table.
- R802.5.1(4) as R802.4.1(4) - no change to table.
- R802.5.1(5) as R802.4.1(5) - no change to table.

<p>RB310-16 AM, RB221-16 AM (continued)</p>	<p>R802.5.1(6) as R802.4.1(6) - no change to table. R802.5.1(7) as R802.4.1(7) - no change to table. R802.5.1(8) as R802.4.1(8) - no change to table. R802.5.1(9) as R802.5.2 - no change to table.</p> <p>2. Renumbered Figure R802.5.1 as R802.4.5 and delete all cross references to section numbers from the table and delete "Note: Where ceiling joists..."</p> <p>3. Renumbered the cross reference in Table R602.3(1), item 4: Table R802.5.1(9) as R802.5.2.</p>
<p>RB315-16 AS</p>	<p><u>R802.1.8 Prefabricated wood I-joists. Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D5055.</u></p>

Code change jargon explained:

RB###-16 XX – this is a specific, unique code change from the 2016 hearing cycle. The last two to four characters describe whether the code change was accepted by the committee reviewing the code change: (1) as submitted, (2) as modified by the committee, or (3) as modified at the public comment hearing.

AS – Code change approved as originally written and submitted

AM – Code change modified by IRC building committee

AMPC – Code change modified by public comment at the public comment hearings

2018 Fire, Energy, and WUI Code Changes Related to Wood Construction

John “Buddy” Showalter, P.E., Loren Ross, P.E., and Sam Francis, C.B.O.

Introduction

The 2018 *International Fire Code (IFC)*, 2018 *International Energy Conservation Code (IECC)*, and 2018 *International Wildland Urban Interface Code (IWUIC)* were all approved by the International Code Council (ICC) during their 2015/2016 code development cycle. This article outlines changes to all three codes as they relate to wood construction. Accompanying discussion of each code change is the ICC code change tracking number [bracketed] that can be used to search for more information on the ICC website (iccsafe.org). The Appendix to this paper, beginning on page 41, contains a strikethrough/underline format of changes where it is deemed helpful to understand the code changes outlined herein.

Approved Agencies

Certification report writing agencies were introduced into the definition of Approved Agency in the IECC. “Research reports” was removed from the proposed definition, as well as a requirement for accreditation by a national body, leaving “product certification” only. [ADM6-16 AMPC1]

International Energy Conservation Code – Residential

- Alters the reduced insulation in ceilings based on available space which complicates rafter sizing. [RE40-16, AMPC1]
- Reduces the stringency for compliance under

KEYWORDS: *wildland urban interface, U-factor, R-values, sprinklers, NFPA 13R*



the energy rating index (ERI) path and prohibits consideration of renewables in the ERI numbers unless the envelope is as good as the 2015 IECC. [RE173-16, AMPC1]

International Energy Conservation Code – Commercial

- Correlates U-factors to R-values in the associated tables; corrects U-factor requirements in IECC Table C402.1.4 to be consistent with the R-value requirements in IECC Table C402.1.3; the U-factor criteria in Table C402.1.4 for mass wall requirements for Climate Zone 7, Group R was corrected to make it consistent with other values for R-15.2 c.i. in Table C402.1.3 – it is 0.71 as can be seen from other cases where R-15.2 c.i. is prescribed; the U-factor criteria in Table C402.1.4 for mass floor requirements for

Climate Zone 6, Group R was corrected to make it consistent with other values for R-12.5 c.i. in Table C402.1.3 – it is 0.64 as can be seen from other cases where R-12.5 c.i. is prescribed. [CE69-16]

- Adds “Additional Efficiency Package” options which could add opportunities for wood construction. [CE230-16 AM]

International Fire Code

- Adds new conditions which trigger sprinkler requirements for multi-family residential attics in buildings equipped with NFPA 13R sprinkler systems. [F172-16 AM]
- Includes Type IV construction in an exception for reduced rating of fire barriers creating hazardous materials control areas in IFC 5003.8.3.4 and IBC 414.2.4. [F355-16]
- Adds a trigger for sprinkler systems in schools (Group E occupancies) when the fire area has an occupant load of 300 or more. [F157-16]
- Requires sprinkler protection for balconies in Type III and IV buildings having an NFPA 13R sprinkler system. [F170-16 AMPC1]
- Addresses fire protection on active construction sites. [F327-16 AM]
- Gives fire code officials the ability to require site security for buildings under construction during off work hours. [F329-16 AM]

International Wildland Urban Interface Code

- Permits the use of FRTW in Class 3 Ignition Resistant construction, consistent with current allowances for FRTW in Class 1 and 2 Ignition Resistant construction. [WUIC8-16]

Conclusion

The 2018 IFC, 2018 IECC, and 2018 IWUIC are all available from ICC (www.iccsafe.org) and represent the state-of-the-art for design and construction of buildings within their scope. Changes to wood provisions in most cases lead to more efficient use of wood in design and construction. In some situations, a building designer may want to use a more up-to-date code provision or

consensus standard than is recognized in the building code adopted by a jurisdiction. In those cases, building officials, in accordance with IFC Section 104.9, IECC C102, and IWUIC 105.3, are permitted to accept designs prepared in accordance with newer consensus reference standards. These “alternative materials, design and methods” provisions allow a jurisdiction to adopt new technologies in materials and building construction provided documentation is provided to the jurisdiction that is found to provide equivalency in quality, strength, durability and safety.

Loren Ross, P.E. is Manager of Engineering Research, Sam Francis, C.B.O. is Senior Director of National Programs, and John “Buddy” Showalter, P.E. is Vice President of Technology Transfer for the American Wood Council (AWC). Contact Mr. Showalter (bshowalter@awc.org) with questions.

Appendix A: 2018 IFC, IECC, and IWUIC Changes Related to Wood Construction – Strikethrough/Underline Format

ICC Code Change Tracking Number	Strikethrough/Underline Text																		
ADM6-16 AMPC1	<p>IECC R202 DEFINITIONS APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests, or furnishing inspection services, <u>or furnishing product certification</u>, where such agency has been approved by the building official.</p>																		
RE40-16 AMPC1	<p>IECC R402.2.2 Ceilings without attic spaces. Where Section R402.1.2 would require insulation levels above <u>greater than R-30 in the ceiling</u> and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation for such roof/ceiling assemblies shall be R-30. <u>Insulation shall extend over the top of the wall plate to the eaves outer edge of such plate and shall not be compressed.</u> This reduction of insulation from the requirements of Section R402.1.2 shall be limited to 500 square feet or 20 percent of the total insulated ceiling area, whichever is less. This reduction shall not apply to the U-factor alternative approach in Section R402.1.4 and the total UA alternative in Section R402.1.5.</p>																		
RE173-16 AMPC1	<p>IECC TABLE R406.4 (N1106.4) MAXIMUM ENERGY RATING INDEX</p> <table border="1" data-bbox="451 1220 964 1675"> <thead> <tr> <th>CLIMATE ZONE</th> <th>ENERGY RATING INDEX^a</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>52 <u>57</u></td> </tr> <tr> <td>2</td> <td>52 <u>57</u></td> </tr> <tr> <td>3</td> <td>51 <u>57</u></td> </tr> <tr> <td>4</td> <td>54 <u>62</u></td> </tr> <tr> <td>5</td> <td>55 <u>61</u></td> </tr> <tr> <td>6</td> <td>54 <u>61</u></td> </tr> <tr> <td>7</td> <td>53 <u>58</u></td> </tr> <tr> <td>8</td> <td>53 <u>58</u></td> </tr> </tbody> </table> <p>a. <u>When on-site renewable energy is included for compliance using the ERI analysis per Section R406.4, the building shall meet the mandatory requirements with Section R406.2 and the building thermal envelope shall be greater than or equal to levels of efficiency and Solar Heat Gain Coefficient in Table R402.1.2 or Table R402.1.4.</u></p>	CLIMATE ZONE	ENERGY RATING INDEX ^a	1	52 <u>57</u>	2	52 <u>57</u>	3	51 <u>57</u>	4	54 <u>62</u>	5	55 <u>61</u>	6	54 <u>61</u>	7	53 <u>58</u>	8	53 <u>58</u>
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<p>CE230-16 AS</p>	<p>IECC C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS PACKAGES</p> <p>C406.1 Requirements. Buildings shall comply with at least one of the following:</p> <ol style="list-style-type: none"> 1. More efficient HVAC performance in accordance with Section C406.2. 2. Reduced lighting power density system in accordance with Section C406.3. 3. Enhanced lighting controls in accordance with Section C406.4. 4. On-site supply of renewable energy in accordance with Section C406.5. 5. Provision of a dedicated outdoor air system for certain HVAC equipment in accordance with Section C406.6. 6. High-efficiency service water heating in accordance with Section C406.7. 7. Enhanced envelope performance in accordance with Section C406.8. 8. Reduced air infiltration in accordance with Section C406.9 <p>Add new text as follows:</p> <p>C406.8 Enhanced envelope performance. <u>The total UA of the building thermal envelope as designed shall be not less than 15 percent below the total UA of the building thermal envelope in accordance with Section C402.1.5.</u></p> <p>C406.9 Reduced air infiltration. <u>Air infiltration shall be verified by whole building pressurization testing conducted in accordance with ASTM E779 or ASTM E1827 by an independent third party. The measured air leakage rate of the building envelope shall not exceed 0.25 cfm/ft² under a pressure differential of 0.3 in. water, with the calculated surface area being the sum of the above and below grade building envelope. A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the code official and the building owner.</u></p> <p>Exception. <u>For buildings having over 250,000 square feet of conditioned floor area, air leakage testing need not be conducted on the whole building where testing is conducted on representative above-grade sections of the building. Tested areas shall total not less than 25 percent of the conditioned floor area and shall be tested in accordance with this section.</u></p>
<p>F157-16 AMPC1</p>	<p>IFC 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:</p> <ol style="list-style-type: none"> 1. Throughout all Group E fire areas greater than 12,000 square feet in area. 2. <u>The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies.</u> <p>Exception: <u>In buildings where every classroom has not fewer than one exterior exit door at ground level, an automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area.</u></p> <ol style="list-style-type: none"> 3. <u>The fire area has an occupant load of 300 or more.</u>

<p>F170-16 AMPC1</p>	<p>IFC 903.3.1.2.1 Balconies and decks. Sprinkler protection shall be provided for exterior balconies, decks and ground floor patios of dwelling units and sleeping units where <u>either of the following conditions exist:</u></p> <ol style="list-style-type: none"> <u>1. The building is of Type V construction, provided there is a roof or deck above, or</u> <u>2. Exterior balconies, decks and ground floor patios of dwelling units and sleeping units are constructed in accordance with Section 1406.3 exception 3 of the <i>International Building Code</i>.</u> <p>Sidewall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch to 6 inches below the structural members and a maximum distance of 14 inches below the deck of the exterior balconies and decks that are constructed of open wood joist construction.</p>
<p>F172-16 AM</p>	<p>IFC 903.3.1.2.3 Attics Attic protection shall be provided as follows:</p> <ol style="list-style-type: none"> <u>1. Attics that are used or intended for living purposes or storage shall be protected by an automatic sprinkler system.</u> <u>2. Where fuel-fired equipment is installed in an unsprinklered attic, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment.</u> <u>3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or Section 510.4 of the <i>International Building Code</i>, attics not required by Item 1 to have sprinklers shall comply with one of the following if the roof assembly is located more than 55 feet above the lowest level of required fire department vehicle access:</u> <ol style="list-style-type: none"> <u>3.1. Provide automatic sprinkler system protection.</u> <u>3.2. Construct the attic using noncombustible materials.</u> <u>3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the <i>International Building Code</i>.</u> <u>3.4. Fill the attic with noncombustible insulation.</u> <p>The height of the roof assembly shall be determined by measuring the distance from the <u>lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503.</u></p> <ol style="list-style-type: none"> <u>4. Group R-4 Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following:</u> <ol style="list-style-type: none"> <u>4.1. Provide automatic sprinkler system protection.</u> <u>4.2. Provide a heat detector system throughout the attic that is arranged to activate the building fire alarm system in accordance with Section 907.2.10.</u> <u>4.3. Construct the attic using noncombustible materials.</u> <u>4.4. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the <i>International Building Code</i>.</u>

<p>F172-16 AM (continued)</p>	<p>4.5. Fill the attic with noncombustible insulation.</p> <p>903.2.8.3 Group R-4 Condition 2. An automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4 Condition 2 occupancies. Attics shall be protected in accordance with Section 903.2.8.3.1 or 903.2.8.3.2.</p> <p>903.2.8.3.1 Attics used for living purposes, storage or fuel-fired equipment. Attics used for living purposes, storage or fuel-fired equipment shall be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.</p> <p>903.2.8.3.2 Attics not used for living purposes, storage or fuel-fired equipment. Attics not used for living purposes, storage or fuel-fired equipment shall be protected in accordance with one of the following:</p> <ol style="list-style-type: none"> 1. Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with Section 907.2.10. 2. Attics constructed of noncombustible materials. 3. Attics constructed of fire-retardant-treated wood framing complying with Section 2303.2 of the International Building Code. 4. The automatic sprinkler system shall be extended to provide protection throughout the attic space.
<p>F327-16 AM</p>	<p>IFC 3309.1 Emergency telephone. Emergency telephone facilities with ready access ready access shall be provided in an approved location at the construction site <u>or an approved equivalent means of communication shall be provided.</u> The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone <u>or where an equivalent means of communication has been approved the site address and fire department emergency telephone number shall be posted at the main entrance to the site, in guard shacks and in the construction site office.</u></p>
<p>F329-16 AS</p>	<p>IFC 3304.5.1 Fire watch during combustible construction. Where required by the fire code official, a fire watch shall be provided during non-working hours for construction that <u>exceeds 40 feet in height above the lowest adjacent grade.</u></p>
<p>WUIC8-16 AS</p>	<p>IWUIC 506.3 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls.</p> <p>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, <u>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.</u></p>

Code change jargon explained:

ADM###-16 XX – this is a specific, unique code change from the 2016 hearing cycle. The last two to four characters describe whether the code change was accepted by the committee reviewing the code change: (1) as submitted, (2) as modified by the committee, or (3) as modified at the public comment hearing.

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