IBC - Fire Safety

2024 GROUP A PROPOSED CHANGES TO THE I-CODES

Committee Action Hearings (CAH #2)
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FS2-24

IBC: 703.2.1.3

Proposed Change as Submitted

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org); Steve Skalko, Stephen V. Skalko, P.E. & Associates LLC, Precast/Prestressed Concrete Institute (svskalko@svskalko-pe.com); Shamim Rashid-Sumar, National Ready Mixed Concrete Association, National Ready Mixed Concrete Association (ssumar@nrmca.org)

2024 International Building Code

Revise as follows:

703.2.1.3 Restrained classification. Fire-resistance-rated assemblies tested under ASTM E119 or UL 263 shall not be considered to be restrained unless evidence satisfactory to the *building official* is furnished by the *registered design professional* showing that the construction qualifies for a restrained classification in accordance with ASTM E119 or UL 263. Restrained construction shall be identified on the *construction documents*. **Exception:** Unless otherwise determined by the *registered design professional*, concrete girders, beams, and slabs connected to structural concrete framing or structural concrete walls in accordance with ACI 318 shall be considered restrained. Restrained concrete construction shall be identified on the *construction documents*.

Reason: This code change proposal does not alter the technical requirements of the code. The exception is simply to avoid sending the Registered Design Professional (RDP) to ASTM E119 to discover that all concrete connections designed in accordance with ACI 318 restrain movement relative to the supporting structural members. This is consistent with the classification described in ASM E119 Standard Test Methods for Fire Tests of Building Construction and Materials. Appendix X3 Guide for Determining Condition of Restrain for Floor and Roof Assemblies and for Individual Beams of ASTM E119 advises that concrete framing is to be considered restrained for:

(1) Beams fastened to the framing members,

(2) All types of concrete cast-in-place floor or roof construction (such as beam-and-slabs, flat slabs, pan joists, and waffle slabs) where the floor or roof construction is cast with the framing members

(3) Interior and exterior spans of precast construction with cast-in-place joints resulting in restraint equivalent to that which would exist in condition (1).

(4) All types of prefabricated floor or roof construction where the structural members are secured to such construction.

The minimum structural integrity requirements of ACI 318 are such that horizontal structural concrete elements are required to have connections restraining movement relative to the supporting structural member. ACI 318 Table 4.10.2.1 – Minimum requirements for structural integrity based on member type directs the RDP to the appropriate structural integrity sections of ACI 318:

Nonprestressed one-way cast-in-place slabs – 7.7.7

Nonprestressed two-way slabs – 8.7.4.2

Prestressed two-way slabs – 8.7.5.6

Nonprestresssed two-way joint systems – 8.8.1.6

Cast-in-place beam – 9.7.7

Nonprestressed one-way joint system – 9.8.1.6

Precast joint and connection – 16.2.1.8

For those interested in the minimum structural integrity requirements of ACI 318, they are as follows:

Nonprestressed one-way cast-in-place slabs

7.7.7 *Structural integrity reinforcement in cast-in-place one-way slabs*

7.7.7.1 Longitudinal structural integrity reinforcement consisting of at least one-quarter of the maximum positive moment reinforcement shall be continuous.

7.7.7.2 Longitudinal structural integrity reinforcement at noncontinuous supports shall be anchored to develop f_y at the face of the support.

7.7.7.3 If splices are necessary in continuous structural integrity reinforcement, the reinforcement shall be spliced near supports. Splices shall be mechanical or welded in accordance with 25.5.7 or Class B tension lap splices in accordance with 25.5.2.

Nonprestressed two-way slabs

8.7.4.2 *Structural integrity*

8.7.4.2.1 All bottom deformed bars or deformed wires within the column strip, in each direction, shall be continuous or spliced using mechanical or welded splices in accordance with 25.5.7 or Class B tension lap splices in accordance with 25.5.2. Splices shall be located in accordance with Fig. 8.7.4.1.3.

8.7.4.2.2 At least two of the column strip bottom bars or wires in each direction shall pass within the region bounded by the longitudinal reinforcement of the column and shall be anchored at exterior supports.

Prestressed two-way slabs

8.7.5.6 *Structural integrity*

8.7.5.6.1 Except as permitted in 8.7.5.6.3, at least two tendons with 1/2 in. diameter or larger strand shall be placed in each direction at columns in accordance with (a) or (b):

(a) Tendons shall pass through the region bounded by the longitudinal reinforcement of the column.

(b) Tendons shall be anchored within the region bounded by the longitudinal reinforcement of the column, and the anchorage shall be located beyond the column centroid and away from the anchored span.

8.7.5.6.2 Outside of the column and shear cap faces, the two structural integrity tendons required by **8.7.5.6.1** shall pass under any orthogonal tendons in adjacent spans.

8.7.5.6.3 Slabs with tendons not satisfying 8.7.5.6.1 shall be permitted if bonded bottom deformed reinforcement is provided in each direction in accordance with 8.7.5.6.3.1 through 8.7.5.6.3.3.

8.7.5.6.3.1 Minimum bottom deformed reinforcement A_s in each direction shall be the larger of (a) and (b). The value of *fy* shall be limited to a maximum of 80,000 psi:

(a) $A_s = [4.5 (f_c')^{0.5} c_2 d]/f_y$ (8.7.5.6.3.1a)

(b) $A_s = [300 c_2 d/f_y]$ (8.7.5.6.3.1b)

where c_2 is measured at the column faces through which the reinforcement passes.

8.7.5.6.3.2 Bottom deformed reinforcement calculated in 8.7.5.6.3.1 shall pass within the region bounded by the longitudinal reinforcement of the column and shall be anchored at exterior supports.

8.7.5.6.3.3 Bottom deformed reinforcement shall be anchored to develop f_y beyond the column or shear cap face.

Nonprestresssed two-way joint systems

8.8.1.6 For structural integrity, at least one bottom bar in each joist shall be continuous and shall be anchored to develop fy at the face of supports.

Cast-in-place beam

9.7.7 Structural integrity reinforcement in cast-in-place beams

9.7.7.1 For beams along the perimeter of the structure, structural integrity reinforcement shall be in accordance with (a) through (c):

(a) At least one-quarter of the maximum positive moment reinforcement, but not less than two bars or strands, shall be continuous

(b) At least one-sixth of the negative moment reinforcement at the support, but not less than two bars or strands, shall be continuous

(c) Longitudinal structural integrity reinforcement shall be enclosed by closed stirrups in accordance with 25.7.1.6 or hoops along the clear span of the beam

9.7.7.2 For other than perimeter beams, structural integrity reinforcement shall be in accordance with (a) or (b):

(a) At least one-quarter of the maximum positive moment reinforcement, but not less than two bars or strands, shall be continuous.

(b) Longitudinal reinforcement shall be enclosed by closed stirrups in accordance with 25.7.1.6 or hoops along the clear span of the beam.

9.7.7.3 Longitudinal structural integrity reinforcement shall pass through the region bounded by the longitudinal reinforcement of the column.

9.7.7.4 Longitudinal structural integrity reinforcement at noncontinuous supports shall be anchored to develop f_y at the face of the support.

9.7.7.5 If splices are necessary in continuous structural integrity reinforcement, the reinforcement shall be spliced in accordance with (a) and (b):

(a) Positive moment reinforcement shall be spliced at or near the support

(b) Negative moment reinforcement shall be spliced at or near midspan

9.7.7.6 Splices shall be mechanical or welded in accordance with 25.5.7 or Class B tension lap splices in accordance with 25.5.2.

Nonprestressed one-way joint system

9.8.1.6 For structural integrity, at least one bottom bar in each joist shall be continuous and shall be anchored to develop fy at the face of supports

Precast joint and connection

16.2.1.8 Integrity ties shall be provided in the vertical, longitudinal, and transverse directions and around the perimeter of a structure in accordance with 16.2.4 or 16.2.5

16.2.4 *Minimum connection strength and integrity tie requirements*

16.2.4.1 Except where the provisions of 16.2.5 govern, longitudinal and transverse integrity ties shall connect precast members to a lateral-force-resisting system, and vertical integrity ties shall be provided in accordance with 16.2.4.3 to connect adjacent floor and roof levels.

16.2.4.2 Where precast members form floor or roof diaphragms, the connections between the diaphragm and those members being

laterally supported by the diaphragm shall have a nominal tensile strength of not less than 300 lb per linear ft.

16.2.4.3 Vertical integrity ties shall be provided at horizontal joints between all vertical precast structural members, except cladding, and shall satisfy (a) or (b):

(a) Connections between precast columns shall have vertical integrity ties, with a nominal tensile strength of at least $200A_g$lb, where A_g is the gross area of the column. For columns with a larger cross section than required by consideration of loading, a reduced effective area based on the cross section required shall be permitted. The reduced effective area shall be at least one-half the gross area of

the column.

(b) Connections between precast wall panels shall have at least two vertical integrity ties, with a nominal tensile strength of at least 10,000 lb per tie.

16.2.5 Integrity tie requirements for precast concrete bearing wall structures three stories or more in height.

16.2.5.1 Integrity ties in floor and roof systems shall satisfy (a) through (f):

(a) Longitudinal and transverse integrity ties shall be provided in floor and roof systems to provide a

nominal tensile strength of at least 1500 lb per foot of width or length.

(b) Longitudinal and transverse integrity ties shall be provided over interior wall supports and between the floor or roof system and exterior walls.

(c) Longitudinal and transverse integrity ties shall be positioned in or within 2 ft of the plane of the floor or roof system.

(d) Longitudinal integrity ties shall be oriented parallel to floor or roof slab spans and shall be spaced not greater than 10 ft on center. Provisions shall be made to transfer forces around openings.

(e) Transverse integrity ties shall be oriented perpendicular to floor or roof slab spans and shall be spaced not greater than the bearing wall spacing.

(f) Integrity ties at the perimeter of each floor and roof, within 4 ft of the edge, shall provide a nominal tensile strength of at least 16,000 lb.

16.2.5.2 Vertical integrity ties shall satisfy (a) through (c):

(a) Integrity ties shall be provided in all wall panels and shall be continuous over the height of the building.

(b) Integrity ties shall provide a nominal tensile strength of at least 3000 lb per horizontal foot of wall.

(c) At least two integrity ties shall be provided in each wall panel.

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

Justification for no cost impact:

No technical change to the provisions of the code. Proposal simply adds language to IBC that reflects the nature of the provisions in ASTM E119

FS2-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee determined that the proposed exception language clarifies the requirements of "Restrained

classification" in the code. The exception is added to avoid sending the RDP to ASTM E119 to determine all concrete connections designed in accordance with ACI 318 for restrained movement relative to the supporting structural members (Vote: 11-0).

FS2-24

Individual Consideration Agenda

Comment 1:

IBC: 703.2.1.3

Proponents: Bonnie Manley, AISC, AISC (manley@aisc.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

703.2.1.3 Restrained classification. Fire-resistance-rated assemblies tested under ASTM E119 or UL 263 shall not be considered to be restrained unless evidence satisfactory to the *building official* is furnished by the *registered design professional* showing that the construction qualifies for a restrained classification in accordance with ASTM E119 or UL 263. Restrained construction shall be identified on the *construction documents*. ~~**Exception**~~ **Exceptions:**

1. Unless otherwise determined by the *registered design professional*, concrete girders, beams, and slabs connected to structural concrete framing or structural concrete walls in accordance with ACI 318 shall be considered restrained. Restrained concrete construction shall be identified on the *construction documents*.
2. Unless otherwise determined by the *registered design professional*, cast-in-place or prefabricated concrete floor or roof construction secured to structural steel framing members and individual structural steel beams and girders that are welded or bolted to integral framing members shall be considered restrained construction in accordance with AISC 360, Appendix 4, Section 4.3.3. Restrained structural steel construction shall be identified on the *construction documents*.

Reason: The purpose of this modification is to add comparable information on restrained construction for structural steel elements. From AISC 360-22, Appendix 4, Section 4.3.3 states the following:

> **4.3.3. Restrained Construction**
>
> For floor and roof assemblies and individual beams in buildings, a restrained condition exists when the surrounding or supporting structure is capable of resisting forces and accommodating deformations caused by thermal expansion throughout the range of anticipated elevated temperatures. Cast-in-place or prefabricated concrete floor or roof construction secured to steel framing members, and individual steel beams and girders that are welded or bolted to integral framing members, shall be considered restrained construction.

Additionally, from AISC 360-22, Commentary Appendix Section 4.3.3:

> Gewain and Troup (2001) provide a detailed review of the background research and practices in the qualification fire-resistance testing and rating of structural steel and composite steel/concrete girders, beams, and steel-framed floors and roofs. The restrained assembly fire-resistance ratings, developed from tests on loaded restrained floor or roof specimens, and the restrained beam fire-resistance ratings, developed from tests on loaded restrained beam specimens, are commonly applicable to all types of steel-framed floors, roofs, girders, and beams, with minor exceptions, as recommended in Table X3.1 of ASTM E119, especially where they incorporate or support cast-in-place or prefabricated concrete slabs. AISC Design Guide 19, Fire Resistance of Structural Steel Framing (Ruddy et al., 2003), provides several detailed examples of steel-framed floor and roof designs by qualification testing.

Please refer to the full AISC 360-22 commentary for additional technical background and guidance on applying the provisions. AISC makes its standards available to all free of charge. AISC 360-22 can be downloaded for free from https://www.aisc.org/publications/steel-standards/.

Bibliography: AISC (2022), *Specification for Structural Steel Buildings*, ANSI/AISC 360-22, American Institute of Steel Construction, Chicago, Ill., August 1, 2022.
Available at: https://www.aisc.org/publications/steel-standards/.

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

Justification for no cost impact:

This proposal references a standard already adopted in the 2024 IBC.

Comment (CAH2)# 478

Comment 2:

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org) requests As Submitted

Reason: Support committee action for approval as submitted.

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

Comment (CAH2)# 375

FS6-24

IBC: 703.3.1, 703.3.2 (New)

Proposed Change as Submitted

Proponents: Shamim Rashid-Sumar, National Ready Mixed Concrete Association, National Ready Mixed Concrete Association (ssumar@nrmca.org); Darryl Dixon, National Ready Mixed Concrete Association, National Ready Mixed Concrete Association (ddixon@nrmca.org)

2024 International Building Code

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

Add new text as follows:

703.3.2 Inherently noncombustible materials. Inherently noncombustible materials, such as concrete and steel, shall not be required to be tested to be acceptable as noncombustible materials.

Reason: This code change provides a clarification to IBC Section 703.3.1, which requires that materials required to be noncombustible be tested in accordance with ASTM E136 or ASTM E2652. However, the testing requirements should not apply to clearly noncombustible materials such as concrete, masonry or steel.

The proposed text provides necessary clarification indicating that such materials are not required to be tested.

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

Justification for no cost impact:

This code change provides an editorial clarification to the previous code section and will not increase or decrease the cost of construction.

FS6-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal based on the fact that the proposed text is confusing. The committee encouraged the proponent to work on modifying the proposal for the CAH2. Specifically, clarify the aspect ratio of some materials, organic materials, and add more specific language to clarify what needs to be tested. The committee suggested that the proposed modifications during the CAH1 be incorporated (Vote: 8-3).

FS6-24

Individual Consideration Agenda

Comment 1:

IBC: 703.3.1, 703.3.2

Proponents: Marcelo Hirschler, GBH International, GBH International (mmh@gbhint.com); Robert Marshall, FCAC, FCAC (fcac@iccsafe.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

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

Revise as follows:

703.3.2 ~~Inherently noncombustible materials~~ Testing not required. ~~Inherently noncombustible materials, such as concrete and steel,~~ The following building materials shall not be required to be tested to be acceptable as noncombustible building materials.

1. Steel.
2. Concrete, containing no combustible aggregates or fibers,
3. Masonry, containing no combustible aggregates or fibers,
4. Glass (excluding plastic glazing),
5. 5xxx and 6xxx series aluminum alloys.

Reason: Several materials can claim to be inherently noncombustible, in many cases without it being truly valid. For example, any plastic or wood materials are always combustible. This issue is an important consideration for building materials (as required in multiple areas of the IBC, such as chapters 6, 8 and 14, where requirements are different depending on whether the materials are or are not noncombustible.

Some materials exist (often insulation materials) where it is not possible to determine without testing (normally to ASTM E136, as required in section 703.3.1 of this code) whether they are truly noncombustible. For example, fiberglass insulation materials will always contain some combustible binder to be useful. The material can pass the ASTM E136 test (and be noncombustible) if it contains a small amount of binder but fail the test with larger amount of binder. That can only be determined by testing and is impossible to note visually.

It makes no sense to test steel, concrete or masonry (if they contain no combustible aggregates or fibers; this would have to be certified by the proponent). Therefore, as it has been shown by testing (and common sense) that testing steel, concrete or masonry to ASTM E136 is unnecessary, as they will pass the test they can be excluded from being required to be tested.

However, some new building materials are made with organic (such as foam plastics) components to lower the weight and make them easier to manipulate. In that case, it is unclear whether they are truly noncombustible materials, and they would need to be tested to know the answer for sure. That is why the requirement has been added that they contain no combustible aggregates or fibers.

Test results from at least two testing labs have been able to show that glass (whether ordinary glass or quartz) truly meets the requirements of ASTM E136 and is a noncombustible material. The same is not true for other glazing materials, which are typically plastic and are combustible; they must be excluded.

That brings up the question of aluminum. Typical building materials are, more often than not, alloys of aluminum and other metals. The

Aluminum Association has published a report in Building Safety Journal (August 17th, 2020) where they discuss the “noncombustibility” of aluminum. It is of great interest that the 4 aluminum alloys that they tested “were selected for their widespread use in construction”. Those alloys tested all passed the ASTM E136 test. However, the same report also states that “Aluminum, just like many comparable metals, is not combustible in any general application other than when it is specifically made to be.” That suggests that there may be some aluminum alloys that may or may not be noncombustible. After considerable debate and investigation of test reports, consensus was reached that most of the aluminum alloys used as building materials belong to the 6xxx series of alloys, with less than 1.2% magnesium, and the main ones (such as 6063, 6061, 6005) have all been tested for noncombustibility. In terms of sheet aluminum products, the series 5xxx alloys (such as 5052, 5083, 5005) are often used in construction, with higher levels if magnesium (the highest being 5083, which contains 4.9% magnesium). This product has also been tested and shown to be noncombustible. Therefore, consensus was reached that it is safe to include “5xxx and 6xxx series aluminum alloys” to the list of building materials that do not require testing to be considered noncombustible materials.

The task group that developed this comment included representatives from a variety of industries, including: steel, aluminum, concrete, masonry, glass, wood, and plastics.

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

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

Justification for no cost impact:

This will clarify that a number of materials are clearly noncombustible and will not require additional fire testing. If anything, this comment will decrease costs because less testing for non combustibility will be needed.

Comment (CAH2)# 106

FS7-24

IBC: 703.7

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org)

2024 International Building Code

Revise as follows:

703.7 Sealing of adjacent mass timber elements. In *buildings* of Types IV-A, IV-B and IV-C construction, where a *fire-resistant joint system* is not required at abutting *joints* or intersections in accordance with Section 715, ~~sealant or adhesive~~ sealants meeting the requirements of ASTM C920 or adhesives meeting the requirements of ASTM D3498 shall be provided to resist the passage of air ~~in~~ at the following locations:

1. ~~At abutting~~ Abutting edges and intersections of *mass timber building elements* required to be fire-resistance rated.
2. ~~At abutting~~ Abutting intersections of *mass timber building elements* and *building elements* of other materials where both are required to be fire-resistance rated.

~~Sealants shall meet the requirements of ASTM C920. Adhesives shall meet the requirements of ASTM D3498.~~

~~**Exception**~~ **Exceptions:** Sealants or adhesives need not be provided ~~where they are not a required component of a tested fire-resistance-rated assembly~~ where any of the following apply:

1. The abutting edges or intersections were tested without sealants or adhesives as part of a *fire-resistance-rated* assembly.
2. The abutting edges or intersections occur entirely within a single *dwelling unit* or *fire area* in the same *story*.
3. Draftstopping material in accordance with Section 718.3.1 is installed on the unexposed side of the abutting edges or intersections.

Reason: With the addition of Types IV-A, IV-B, and IV-C construction to the code, a prescriptive requirement for sealing the abutting edges and intersections of fire-resistance-rated mass timber elements was adopted to reduce the likelihood of flames and hot gasses passing between mass timber elements to adjacent fire areas. The requirement for use of adhesives or sealants was prescribed based on details from compartment fire testing, where adhesives or sealants were used at the intersections of mass timber panels. However, the existing code language has been misapplied to require sealants or adhesives between mass timber assemblies that already require a fire-resistant joint system and between mass timber elements that aren't required to perform a fire separation function, such as the bearing of a beam on a column or a mass timber panel on a beam. In addition, other alternatives exist to resist air movement between mass timber elements where fire separation is required. This change addresses these issues.

- The first sentence of Section 703.7 is modified to clarify that Section 703.7 only applies where a fire-resistant joint system is not required, since a fire-resistant joint system would serve the intended purpose of the sealant or adhesive required by Section 703.7, and the inclusion of additional sealants or adhesives might compromise the fire-resistant joint system.
- Exception #1 is modified to clarify that it only applies to abutting edges or intersections that were tested without sealants or adhesives as part of the fire-resistance-rated assembly.
- Exception #2 acknowledges that it is not necessary to prevent passage of air from one side of a building element to the other if both sides of the building element are within the same dwelling unit or fire area.
- Exception #3 is added to recognize that in lieu of using sealant or adhesive, draftstopping material can be installed on the unexposed side to prevent passage of air through the abutting edges or intersections.

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

Estimated Immediate Cost Impact:

This code change proposal will decrease the cost of construction by approximately $50 per tube of sealant or adhesive for each tube not used due to Exception 2 or 3.

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal incorporates exceptions to the use of prescribed sealants or adhesives for conditions where such requirements are unnecessary. There will be both material (approximately $15 per tube of sealant or adhesive) and labor (approximately $35 of labor costs to install each tube) cost savings by reducing the locations where sealants or adhesives are installed.

FS7-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal based on the fact that the proposed text is confusing. The committee also wanted to see more data. The committee indicated that the proposal calls for testing that is nonexistent, stating "We do not do those tests in this fashion". The proposed requirement could be located in different section as suggested during the hearing (Vote: 7-4).

FS7-24

Individual Consideration Agenda

Comment 1:

IBC: 703.7, 703.7.1 (New), 703.7.2 (New)

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

Modify as follows:

2024 International Building Code

703.7 Sealing of adjacent mass timber elements. In *buildings* of Types IV-A, IV-B and IV-C construction,joints or intersections of abutting mass timber building elements shall meet the requirements of 703.7.1 or 703.7.2.~~where a *fire-resistant joint system* is not required at abutting *joints* or intersections in accordance with Section 715, sealants meeting the requirements of ASTM C920 or adhesives meeting the requirements of ASTM D3498 shall be provided to resist the passage of air at the following locations:~~

1. ~~Abutting edges and intersections of *mass timber building elements* required to be fire-resistance rated.~~
2. ~~Abutting intersections of *mass timber building elements* and *building elements* of other materials where both are required to be fire-resistance rated.~~

~~**Exceptions:** Sealants or adhesives need not be provided where any of the following apply:~~

1. ~~The abutting edges or intersections were tested without sealants or adhesives as part of a *fire-resistance-rated* assembly.~~
2. ~~The Abutting edges or intersections occur entirely within a single *dwelling unit* or *fire area* in the same *story*.~~

3. ~~Draftstopping material in accordance with Section 718.3.1 is installed on the unexposed side of the abutting edges or intersections.~~

Add new text as follows:

703.7.1 Joints or intersections with a fire-resistant joint system. *Fire-resistant joint systems* used at joints or intersections shall be installed in accordance with Section 715.2.

703.7.2 Joints or intersections without a fire-resistant joint system. Where a *fire-resistant joint system* is not used, sealants meeting the requirements of ASTM C920 or adhesives meeting the requirements of ASTM D3498 shall be provided to resist the passage of air at the following locations:

1. At abutting edges and intersections of *mass timber building elements* required to be fire-resistance rated.
2. At abutting intersections of *mass timber building elements* and *building elements* of other materials where both are required to be fire-resistance rated.

Exceptions: Sealants or adhesives need not be provided at locations where any of the following apply:

1. The sealant or adhesive is not a required component of a tested *fire-resistance-rated* assembly.
2. The abutting edges or intersections occur entirely within a single *dwelling unit* within a *story* or *fire area* within a *story*.
3. Draftstop material in accordance with Section 718.3.1 is installed on the unexposed side of the abutting edges or intersections.

Reason: The provisions for the sealing of adjacent mass timber elements outlined in Section 703.7 enhance fire safety in buildings of Types IV-A, IV-B, and IV-C construction by restricting the passage of air to prevent the spread of fire and smoke, ultimately contributing to the overall fire protection strategy of the structure. Three changes were made based on comments from the committee in Committee Action Hearing #1 and to make the section easier to understand.

1. The charging language in Section 703.7 was changed to clarify that joints or intersections between mass timber building elements have different requirements when a fire-resistant joint system is used or not.

2. Section 703.7.1 is added to clarify that, when a fire-resistant joint system is used, it shall be installed in accordance with 715.2. This new section will avoid the potential misinterpretation that additional sealants or adhesives are also required, the use of which might compromise the fire-resistant joint system.

3. Section 703.7.2 is added to clarify requirements when a fire-resistant joint system is not used. The existing code language is relocated to this section and modified. Exceptions to 703.7.2 are provided in the code for specific scenarios where sealants or adhesives are not necessary.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

This code change proposal will decrease the cost of construction by approximately $50 per tube of sealant or adhesive for each tube not used due to new section 703.7.1 or new section 703.7.2, Exceptions 2 and 3.

Estimated Immediate Cost Impact Justification (methodology and variables):

See original code proposal for justification of cost decrease.

FS9-24

IBC: 704.5 (New), 704.5, 704.5.1, 704.5.2 (New), AWC Chapter 35 (New)

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org)

2024 International Building Code

Add new text as follows:

704.5 Protection of Connections and Attachments. Connections and attachments to structural members that are required to have a fire-resistance rating shall be protected in accordance with 704.5.1 and 704.5.2.

Revise as follows:

~~**704.5**~~ **704.5.1 Attachments to structural steel members.** The edges of lugs, brackets, rivets and bolt heads attached to structural steel members shall be permitted to extend to within 1 inch (25 mm) of the surface of the fire protection.

~~**704.5.1**~~ **704.5.1.1 Secondary attachments to structural steel members.** Where primary and secondary structural steel members require fire protection, any additional structural steel members having direct connection to the *primary structural frame* or *secondary structural members* shall be protected with the same fire-resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches (305 mm), or shall be applied to the entire length where the attachment is less than 12 inches (305 mm) long. Where an attachment is hollow and the ends are open, the fire-resistive material and thickness shall be applied to both exterior and interior of the hollow steel attachment.

Add new text as follows:

704.5.2 Connections to structural wood members. Where a structural wood member is required to have a *fire-resistance rating*, structural connections to that member shall be protected from fire exposure for the time corresponding to the required *fire-resistance rating* of the member. Protection time shall be determined by one of the following:

1. Testing in accordance with Section 703.2.1 where the connection is part of the fire-resistance test.
2. Engineering analysis that demonstrates that the temperature rise at any portion of the connection is limited to an average temperature rise of 250°F (139°C), and a maximum temperature rise of 325°F (181°C), for a time corresponding to the required *fire-resistance rating* of the structural element being connected. For the purposes of this analysis, the connection includes connectors, fasteners and portions of wood members included in the structural design of the connection.
3. Engineering analysis in accordance with ANSI/AWC FDS.

Add new standard(s) as follows:

AWC

American Wood Council
222 Catoctin Circle SE, Suite 201
Leesburg, VA 20175

ANSI/AWC FDS-2024: Fire Design Specification (FDS) for Wood Construction

Reason: The intent of this proposal is to:

1. Relocate criteria for the protection of connections between structural wood members from Chapter 23 to Chapter 7, alongside related criteria for structural steel connections and attachments.
2. Extend the requirements that currently apply specifically to connections in Types IV-A, IV-B, and IV-C construction to connections

between fire-resistance-rated structural wood members in general.

3. Add a reference to ANSI/AWC *2024 Fire Design Specification (FDS) for Wood Construction*, which provides a design methodology for protecting connections with wood and/or gypsum, where protection times are assigned based on the temperature rise limitations established in ASTM E119 testing and Item #2 of existing Section 2304.10.1. The FDS was developed as an American National Standard through the AWC ANSI-approved consensus standards development process, and is available on the AWC website at the following location: https://awc.org/wp-content/uploads/2023/11/AWC_FDS2024_20231103_AWCWEBSITE.pdf

4. Clarify in the charging paragraph that connections must be protected for the time associated with the members being connected.

If this proposal is successful, the intention is to remove Section 2304.10.1 in the Group B code development process so there are not duplicative requirements in the code.

Bibliography: ANSI/AWC 2024 Fire Design Specification (FDS) for Wood Construction. View this document online: https://awc.org/wp-content/uploads/2023/11/AWC_FDS2024_20231103_AWCWEBSITE.pdf.

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

Estimated Immediate Cost Impact:

$0

Estimated Immediate Cost Impact Justification (methodology and variables):

This proposal relocates a code section from Chapter 23 into a more proper location in Chapter 7. However, it does allow for this section to be available for design of wood members in other types of construction besides Type IV. It provides additional options for compliance with existing connection protection requirements specified in IBC 704.2 and IBC 704.3 without removing any of the existing options for demonstrating compliance. The inclusion of these additional options does not in and of itself increase or decrease the overall cost impact of the code, because these options may not be chosen. The existing options are still relevant, and if chosen, have no cost impact on the actual code requirements.

FS9-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed language needs more clarification. The committee mentioned that the proposed text is a good starting point and the standard is needed. The proponent needs to look into the issue of adding "steel" in sections 704.5.1 and 704.5.1.1. Also, the proposed text does not address the structural aspect. Although the proponent mentioned that the proposal relocated criteria for the protection of connections between structural wood members from Chapter 23, the committee could not find the text in Chapter 23. The committee has an issue with proposing engineering analysis vs testing (Vote: 9-2).

FS9-24

Individual Consideration Agenda

Comment 1:

IBC: 704.5, 704.5.1, 704.5.1.1, 704.5.2

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

Modify as follows:

2024 International Building Code

704.5 Protection of Connections and Attachments. Connections and attachments to structural members that are required to have a fire-resistance rating shall be protected in accordance with 704.5.1 and 704.5.2.

704.5.1 Attachments to structural ~~steel~~ members. The edges of lugs, brackets, rivets and bolt heads attached to structural ~~steel~~ members shall be permitted to extend to within 1 inch (25 mm) of the surface of the fire protection.

704.5.1.1 Secondary attachments to structural ~~steel~~ members. Where primary and secondary structural steel members require fire protection, any additional structural steel members having direct connection to the *primary structural frame* or *secondary structural members* shall be protected with the same fire-resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches (305 mm), or shall be applied to the entire length where the attachment is less than 12 inches (305 mm) long. Where an attachment is hollow and the ends are open, the fire-resistive material and thickness shall be applied to both exterior and interior of the hollow steel attachment.

704.5.2 Connections to structural wood members. Where a structural wood member is required to have a *fire-resistance rating*, structural connections to that member shall be protected from fire exposure for the time corresponding to the required *fire-resistance rating* of the member. Protection time shall be determined by one of the following:

1. Testing in accordance with Section 703.2.1 where the connection is part of the fire-resistance test.
2. Engineering analysis that demonstrates that the temperature rise at any portion of the connection is limited to an average temperature rise of 250°F (139°C), and a maximum temperature rise of 325°F (181°C), for a time corresponding to the required *fire-resistance rating* of the structural element being connected. For the purposes of this analysis, the connection includes connectors, fasteners and portions of wood members included in the structural design of the connection.
3. ~~Engineering analysis~~ Design of protection for structural connections in accordance with ANSI/AWC FDS.

Reason: This comment addresses two concerns that were brought up in the testimony at Committee Action Hearing #1.

1. This comment removes the word "steel" that was originally proposed to the titles and text of Sections 704.5.1 and 704.5.1.1 to address concerns that these sections should apply to all types of construction.

2. Option #3 in the proposed Section 704.5.2 removes the term "engineering analysis" and uses language more consistent with language used in the FDS.

One comment from the Committee regarded some confusion as to where the requirements for Option #2 can be found in the existing code. The requirements in Options #1 and #2 are currently found in Section 2304.10.1. It would be our intention to come back with a proposal in Group B to remove that section if this proposal is approved, so there are not duplicative code requirements in different sections. Chapter 23 is not permitted to be modified in Group A, so it could not be done as one code change at this time.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

$0. This proposal relocates an existing section of code to a more appropriate location and adds an additional option for compliance.

Estimated Immediate Cost Impact Justification (methodology and variables):

This proposal relocates requirements for protecting connections from Section 2304.10.1 to Section 704.5.2, which is mostly editorial. In addition, a third option is provided to protection connections through methods developed in the FDS. Both existing options are maintained in the code. If a designer or builder wants to protect a connection through the existign code methods they can, however this will give them an additional third option which may be beneficial to them.

FS10-24

IBC: 704.5.1

Proposed Change as Submitted

Proponents: Richard Walke, Creative Technology Inc. and CM Services, National Fireproofing Contractors Association (richwalke61@gmail.com)

2024 International Building Code

Revise as follows:

704.5.1 Secondary attachments to structural members. Where primary and secondary structural steel members require fire protection, any additional ~~structural~~ steel members having direct connection to the *primary structural frame* or *secondary structural member*, *and* having a cumulative unprotected footprint greater than 4.65 square inches (3,000 mm^2) per 3 linear feet or per linear meter of primary or secondary steel, shall be protected with the same fire-resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than ~~12~~18 inches (~~305~~457 mm), or shall be applied to the entire length where the attachment is less than ~~12~~18 inches (~~305~~457 mm) long. Where an attachment is hollow and the ends are open, the fire-resistive material and thickness shall be applied to both exterior and interior of the hollow steel attachment.

Reason: Section 704.6.1 of the 2021 IBC was establish based on a Proposal FS8-18 submitted by the California State Fire Marshal's Office. We supported the original intent of the proposal which was to protect secondary non-structural tubular steel attachments. However, during the code development process, the scope of the proposal changed significantly. In the end this section required protection of all "secondary steel attachments" to primary and second structural steel members.

But what is a "secondary steel attachment"? Members of the National Fireproofing Contactors Association (NFCA) have reported code officials are asking for anything and everything attached to the primary and second structural steel members be protected, including sometimes, the tie wires which support acoustical ceilings. That clearly was not the intent of the original proposal.

Section 704.6.1 was updated in the 2024 IBC as a result of Proposal FS11-21 submitted by National Fireproofing Contractors Association (NFCA) with help from the American Iron and Steel Institute. The focus of the changes was to limited the application of the section to structural members having direct connection to the primary structural frame or secondary structural members. Without having hard data to support a more surgical approach to what attachments truly impact the fire performance of the primary and second structural steel members, we believe this was a reasonable compromise.

After further research, we found guidance on the protection of attachments in a UL Solutions United Kingdom document. The 4.65 square inches (3,000 mm^2) per 3 linear feet or per linear meter of structural element length limitation included in this proposal is based on recommendation from *UL Solutions' guide to steelwork fire protection*. The same limitation is also stated in several other international documents relating to fireproofing, including:

1. The Fire and Blast Information Group (FABIG) Technical Note 11, entitled, *Fire Loading and Structural Response*.
2. International Coating's *Intertherm 750 Application Manual*.

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

Estimated Immediate Cost Impact:

Based on industry and manufacturer input, the average cost of protecting an intermediate size attachment for a distance of 18 in. from the primary or secondary steel is approximately $1 to $2.

Estimated Immediate Cost Impact Justification (methodology and variables):

This includes materials and labor costs for protecting a typical attachment for a distance of 18 in. The total cost in any given building will depend upon the number of attachments which will ultimately require protection.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal based on the fact that the proposal created unintended consequences. The proposal lacks supporting data on the issue addressed in the proposed code text (Vote: 11-0).

FS10-24

Individual Consideration Agenda

Comment 1:

Proponents: Richard Walke, Creative Technology Inc. and CM Services, National Fireproofing Contractors Association (richwalke61@gmail.com) requests As Submitted

Reason: At Committee Action Hearing #1, the proponents requested disapproval along with feedback from the Committee on the merits of this proposal. The Committee's feedback suggested they would like to see cases where unprotected attachments are a problem in order to support this proposal.

Since Committee Action Hearing #1, the National Fireproofing Contractors Association has initiated discussions with other industry stakeholders to develop data on the impact of attachments on the fire-resistance rating of building elements. At this time, our work is not far enough along to know what, if any, changes will be needed in this proposal. By requesting As Submitted, our goal is to keep the proposal active so as to be able to develop a comprehensive data backed proposal for the Public Comment Hearing in April, 2026.

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

Comment (CAH2)# 471

FS13-24

IBC: 705.2.2, 705.2.3.1

Proposed Change as Submitted

Proponents: Julius Carreon, City of Bellevue, Washington Association of Building Officials Technical Code Development Committee (jcarreon@bellevuewa.gov); Quyen Thai, City of Tacoma, Washington Association of Building Officials Technical Code Development Committee (qthai@cityoftacoma.org); Micah Chappell, Seattle Department of Construction and Inspections, Washington Association of Building Officials Technical Code Development Committee (micah.chappell@seattle.gov)

2024 International Building Code

Revise as follows:

705.2.2 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any *approved* material. Balconies and similar projections of combustible construction shall comply with Section 705.2.3.1.

705.2.3.1 Balconies and similar projections. Balconies and similar projections of combustible construction other than *fire-retardant-treated wood* shall be *fire-resistance* rated where required by Table 601 for floor construction or shall be of heavy timber construction in accordance with Section 2304.11. *Fire-retardant-treated wood* shall not be permitted for balconies and similar projections on buildings of Type IV-A, IV-B, or IV-C construction. The aggregate length of the projections shall not exceed 50 percent of the *building*'s perimeter on each floor. **Exceptions:**

1. On *buildings* of Types I and II construction, three *stories* or less above *grade plane*, *fire-retardant-treated wood* shall be permitted for balconies, porches, decks and exterior *stairways* not used as required exits.
2. Untreated *wood and plastic composites* that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar *guard* components that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on *buildings* of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a *fire-resistance rating* where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.
5. On buildings of Types IV-A or IV-B construction three stories or less above grade plane, and Type IV-C construction not classified as *high-rise*, non-fire-resistance rated heavy timber building elements shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.

Reason: This code change proposal is intended to clarify the requirements for combustible projections of Type III, IV or V construction in Section 705.2.2 and provides a new/separate exception for combustible projections of Types IV-A, IV-B and IV-C construction, three new construction types added in 2021 code cycle.

For projections of Type III, IV or V construction, the current construction requirements are not clear since Section 705.2.2 simply indicates the construction shall be of any "approved" material. What does an “approved” material mean, particularly when the construction material is combustible, and the type of construction requires fire protection such as for type III-A, IV-A, IV-B, IV-C and V-A? Section 705.2.3.1 provides the requirements when combustible materials are used but there is no direct code path to the section, since it is located as a subsection of 705.2.3 that applies only if the balcony/projection has fire separation distance (FSD) of less than 5-ft.

In addition, the 2021 IBC added three new construction types—IV-A, IV-B and IV-C—that allow the use of mass timber in buildings up to 18, 12 and nine stories. These new types are based on the previous Heavy Timber construction type (renamed Type IV-HT) but with additional fire-resistance ratings and levels of required noncombustible protection, to match the level of performance of Types I and II construction. It is not clear whether the additional fire-resistance ratings and levels of required noncombustible protection will also need to be applied for balconies and similar projections on these new mass timber construction types. It is our understanding that the current construction requirements in IBC Section 705.2 (projections) is intended for the traditional IV construction type (now classified as

Type IV-HT) and therefore not intended for high-rise buildings. The 2024 IBC has clarified exception #3 in 705.2.3.1, which permits the use of type V construction where sprinkler protection is provided, is limited to IV-HT but silent on IV-A, IV-B and IV-C. Hence, depending how the designer and code official interpret what is considered "approved" material in 705.2.2, the projection construction for these new types of construction could be conservative (i.e., all projections need the additional fire resistance rating and non-combustible protection per Table 601) or non-conservative (i.e., use type V, FRT, or exposed/non-rated heavy timber on 18 story high rise).

To address the ambiguity of the code language in Section 705.2.2 and the requirements for combustible projections on the new types of mass timber construction, we are proposing the following:

- Add a pointer on Section 705.2.2 to address combustible projection requirements on fire resistance rated construction types such as Types III-A, IV-A, V-A and new mass timber construction types IV-A/B/C. WABO TCD has also submitted a separate code change proposal that renumbers Section 705.2.3.1 to Section 705.2.4, to clarify and undo the inadvertent substantive change when the section of the code was moved from Section 1406.3 to Section 705.2.3.1 between 2015 and 2018 code (See FS15-15: http://media.iccsafe.org/codes/2015-2017/GroupA/PCH/IBC-Fire-Safety.pdf). Based on the reason statement for FS15-15 and its previous location in 2015 code, Section 705.2.3.1 should be applied independently from Section 705.2.3, which means it should not be constrained by fire separation distance requirements. By adding a pointer on Section 705.2.2, it makes it clear that where fire resistance rating is required by Table 601 for floor construction (i.e., Types III-A, IV-A, V-A and IV-A/B/C), any combustible projection construction will need to comply with 705.2.3.1 regardless if the projection is beyond the 5 feet separation distance trigger in Section 705.2.3. If both proposals are approved, our intent is that the other proposal (renumbering the section) would govern for both Section 705.2.3.1 and the pointer in Section 705.2.2.
- Add a clarifying prohibition and an exception in 705.2.3.1, to deal with combustible projections on Type IV-A, IV-B and IV-C construction.
    - Consistent with the intent of the original proponents of the proposal to introduce Types IV-A, IV-B, and IV-C into the code, fire-retardant treated wood is prohibited in those types of construction. This only affects stick-framed FRT wood, since FRT mass timber does not exist.
    - However, the exception will permit the use of (exposed) non-rated heavy timber construction on buildings of Types IV-A or IV-B construction three stories or less above grade plane, and Type IV-C construction not classified as high rise. This implies that combustible balconies and similar projections on Type IV-A and Type IV-B buildings more than 3-stories and Type IV-C buildings classified as high rise shall meet the type of construction in accordance with Table 601. We understand the fire performance requirements on Types IV-A and IV-B construction were developed based on Type I and Type II construction, hence, the proposed 3-stories cut-off for the exception on Type IV-A and Type IV-B is intended to align with the exception for Type I and Type II (705.2.3.1 exception 1). For Type IV-C, we are proposing a non-high rise cut-off to align with traditional Type IV-HT construction, which does not require fire rated construction (and both Type IV-C and Type IV-HT have 85 feet maximum building height limit).
    - WABO TCD sent a draft of the proposal to AWC and one comment that we received from them is that their preferred terminology was "heavy timber building elements," as opposed to "heavy timber construction" currently use in the IBC. The "heavy timber construction" terminology occurs in (9) other locations in the IBC but we have not proposed to change those in this proposal. If the committee agrees on replacing the terminology with "heavy timber building elements", we can submit an editorial change in the second CAH.

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

Justification for no cost impact:

As noted in the reason statement of the proposal, the construction requirements for combustible balconies and similar projections on the three construction Types IV-A, IV-B and IV-C is currently very ambiguous. Depending how the designer and code official interpret what is considered "approved" material in the current code will determine if this code change proposal will increase or decrease the cost of construction. In general, construction for Types IV-A/B buildings 3-stories or less and Type IV-C buildings that aren't high rises may see a small decrease in cost as this code proposal makes it clear that exposed/non-rated heavy timber is permitted, as opposed to fire-resistance rated mass timber.

Recognizing that the choice of materials used in construction is an option, in jurisdictions where designers and code officials have allowed non-fire-resistance rated heavy timber for these balconies/projections, construction cost for Types IV-A/B buildings that are more than 3-stories and Type IV-C high rise buildings may see a small increase in cost as this code proposal implies the balconies/projection construction for these buildings will need additional fire resistance rating protection per Table 601. Data on the increase in cost is not readily available to people who aren't professional

estimators, but a 2022 online article (https://www.checkatrade.com/blog/cost-guides/cross-laminated-timber-cost/) estimates adding fire protection and soundproofing to cross-laminated timber costs approximately $3 to $7 per square foot. We assume the cost increase will be in this ballpark.

We do not consider the prohibition on FRT wood to be a cost increase since no amount of stick framing should have been allowed in these types of construction.

FS13-24

Public Hearing Results (CAH1)

Errata: This proposal includes unpublished errata "HT" is existing text in 2024 IBC
705.2.3.1 Balconies and similar projections

3. Balconies and similar projections on buildings of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.

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

Committee Modification: 705.2.3.1 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of heavy timber construction in accordance with Section 2304.11. ~~Fire-retardant treated wood~~ Wood structural elements not complying with Table 2304.11 shall not be permitted for balconies and similar projections on buildings of Type IV-A, IV-B, or IV-C construction. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.
Exceptions:

1. On *buildings* of Types I and II construction, three *stories* or less above *grade plane*, *fire-retardant-treated wood* shall be permitted for balconies, porches, decks and exterior *stairways* not used as required exits.

2. Untreated *wood and plastic composites* that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar *guard* components that are limited to 42 inches (1067 mm) in height.

3. Balconies and similar projections on *buildings* of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a *fire-resistance rating* where sprinkler protection is extended to these areas.

4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.

5. On buildings of Types IV-A or IV-B construction three stories or less above grade plane, and Type IV-C construction not classified as *high-rise*, non-fire-resistance rated heavy timber building elements shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.

Committee Reason: The committee agreed that the modification clarifies the intent of the proposal. The proposed text is a needed clarification to the code users (Vote: 11-0).

FS13-24

Individual Consideration Agenda

Comment 1:

IBC: 705.2.3.1

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

Further modify as follows:

2024 International Building Code

705.2.3.1 Balconies and similar projections. Balconies and similar projections of combustible construction other than *fire-retardant-treated wood* shall be *fire-resistance* rated where required by Table 601 for floor construction or shall be of heavy timber construction in accordance with Section 2304.11. Wood structural elements ~~not complying with Table 2304.11 shall not be permitted~~ for balconies and similar projections on buildings of Type IV-A, IV-B, or IV-C construction shall comply with Section 2304.11. The aggregate length of the projections shall not exceed 50 percent of the *building*'s perimeter on each floor.

Exceptions:

1. On *buildings* of Types I and II construction, three *stories* or less above *grade plane*, *fire-retardant-treated wood* shall be permitted for balconies, porches, decks and exterior *stairways* not used as required exits.
2. Untreated *wood and plastic composites* that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar *guard* components that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on *buildings* of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a *fire-resistance rating* where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.
5. On buildings of Types IV-A or IV-B construction three stories or less above grade plane, and Type IV-C construction not classified as *high-rise*, ~~non-fire-resistance rated~~ heavy timber *building elements* shall ~~be permitted~~ not be required to be *fire-resistance rated* for balconies, porches, decks and exterior stairways not used as required exits.

Reason: This is an editorial clean up of some of the language that was approved in Committee Action Hearing #1. In the charging statement, a floor modification made a reference to heavy timber complying with Table 2304.11. However, this should be a reference to heavy timber in compliance with Section 2304.11 (not Table 2304.11). By referencing Section 2304.11, the section will also apply to cross laminated timber (CLT) or other mechanically laminated floor deck which are permitted in heavy timber construction, but are not referenced in Table 2304.11. This sentence was also rearranged to remove a double negative. In Exception #5, language was copied from Exception #3 to make this exception clearer.

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

Justification for no cost impact:

This is an editorial clean up of the code language based on a floor modification in CAH1.

Comment (CAH2)# 32

FS14-24

IBC: 705.6, 705.6.1 (New)

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org)

2024 International Building Code

Delete and substitute as follows:

~~**705.6 Continuity.** The *fire-resistance rating* of *exterior walls* shall extend from the top of the foundation or floor/ceiling assembly below to one of the following:~~

1. ~~The underside of the floor sheathing, roof sheathing, deck or slab above.~~
2. ~~The underside of a floor/ceiling or roof/ceiling assembly having a *fire-resistance rating* equal to or greater than the *exterior wall* and the *fire separation distance* is greater than 10 feet.~~

~~Parapets shall be provided as required by Section 705.12.~~

705.6 Continuity. The continuity of the *fire-resistance rating* shall extend from the top of the foundation to the top of the parapet. If a parapet is not required by Section 705.12, the *fire-resistance rating* shall extend to the underside of the roof sheathing, deck or slab.

Add new text as follows:

705.6.1 Supporting Construction. Where a floor or roof assembly supports an *exterior wall* or parapet above, the portion of the floor or roof assembly that supports the *exterior wall* or parapet shall have a *fire-resistance rating* of not less than the *fire-resistance rating* required for the *exterior wall* or parapet.

Reason: The proposed revision coordinates with existing requirements for fire-resistance rating (FRR) continuity for all types of supporting construction. Existing language, added in 2024 code development cycle (FS18-21), has caused confusion in application to platform construction because walls in platform construction are not continuous from foundation to roof. In platform construction, FRR continuity must be maintained through portions of floor or roof elements supporting the wall or parapet above, however, the wall itself is not continuous. The proposed revisions clarify that FRR continuity is to be maintained to the top of the parapet or to the underside of the roof deck where a parapet is not required. By clarifying the concept of FRR continuity versus continuity of the exterior wall, the intent of Item 2 in existing language is addressed more broadly and no longer necessary in the code.

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

Justification for no cost impact:

This proposal clarifies that the important aspect of fire protection is the continuity of the fire-resistance as required in IBC 705.7.1, and not the continuity of the exterior wall itself.

FS14-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee approved the proposal based on the fact that the proposal coordinates with existing requirements for fire-resistance rating (FRR) continuity for all types of supporting construction (Vote: 8-3).

FS14-24

Individual Consideration Agenda

Comment 1:

IBC: 705.6, 705.6.1

Proponents: David Renn, PE, SE, City and County of Denver, Code Change Committee of ICC Colorado Chapter (david.renn@denvergov.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

705.6 Continuity. The continuity of the *fire-resistance rating* of *exterior walls* shall extend from the top of the foundation to the top of the parapet. If a parapet is not required by Section 705.12, the *fire-resistance rating* of *exterior walls* shall extend to the underside of the roof sheathing, deck or slab.

~~**705.6.1 Supporting Construction.** Where a floor or roof assembly supports an *exterior wall* or parapet above, the portion of the floor or roof assembly that supports the *exterior wall* or parapet shall have a *fire-resistance rating* of not less than the *fire-resistance rating* required for the *exterior wall* or parapet.~~

Reason: 705.6 Continuity: This section is proposed to be revised to add wording to clarify that fire-resistance rating in this section is for exterior walls. The wording added matches the current wording in 705.6.

705.6.1 Supporting Construction: This section is proposed to be deleted since FS16-24 was approved with a new section 705.8 for supporting construction. Since supporting construction is not a continuity requirement it should not be a subsection of the continuity section and it is preferred to have this in its own section as approved in FS16-24. Also, 705.6.1 is narrowly focused on supporting construction for platform framing, while 705.8 is general and covers all supporting construction for exterior walls (e.g., platform framing, curtain wall supported by slab edge or beam, or floor framing supporting a set back exterior wall).

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

Justification for no cost impact:

As with original proposals FS14-24 and FS16-24, the proposed changes are clarifications since the code already includes continuity requirements (in Section 705.6) and includes supporting construction requirements (in Section 704.1.1 that is referenced in FS16-24).

Comment (CAH2)# 186

FS15-24

IBC: 705.7.1

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org)

2024 International Building Code

Revise as follows:

705.7.1 Floor assemblies supporting exterior walls in Type III, IV and V construction. In Type III, IV and V construction where a floor assembly supports gravity loads from an *exterior wall*, the *fire-resistance rating* of the portion of the floor assembly that supports the *exterior wall* shall be not less than the *fire-resistance rating* required for the *exterior wall* in Table 601. The *fire-resistance rating* provided by the portion of the floor assembly supporting and within the plane of the *exterior wall* shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an *exterior wall*, the *building elements* of the floor construction within the plane of the *exterior wall*, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior *building elements* of ~~Type III~~ the applicable type of construction.

Reason: Existing Section 705.7.1 was added by change proposal FS19-21 to address continuity of fire-resistance rating for exterior walls of Type III platform construction. These same structural stability requirements that are appliable to Type III construction are equally applicable to Type IV and V construction where platform construction is used.

The AWC *Design for Code Acceptance No. 3 (DCA 3)* document has design details to maintain the required fire resistance of the wall for fire exposure from the interior of the building, and, when required by IBC Section 705.5, for exposure from the exterior as well. Examples of these details can be found in the AWC DCA 3 document (a link has been provided in the bibliography section below). A ceiling membrane may or may not be present, but as shown in the existing language of Section 705.7.1 and the AWC DCA 3, it is an appropriate design assumption to consider its contribution when the fire rating of the floor assembly supporting the exterior wall is to be based on fire exposure from the interior of the building. This situation could occur in Type IV and V construction as well and the building elements will respond the same way in a fire, so those construction types should be included in this code section.

AWC has a separate change proposal to Section 705.6 to provide general language that supports the concept of continuity of fire-resistance rating applicable when exterior walls are continuous, and when floors intersect the exterior wall in typical platform construction.

Bibliography: American Wood Council *Design for Code Acceptance No. 3.* View this document online: https://awc.org/wp-content/uploads/2021/12/awc-dca3_20210209_awcwebsite.pdf

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

Justification for no cost impact:

This proposal provides clarification of the applicability of existing code requirements for platform construction.

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee concluded that the proposal is expanding on what was approved during the last cycle and it is the right step forward (Vote: 9-2).

Individual Consideration Agenda

Comment 1:

IBC: 705.7.1

Proponents: David Renn, PE, SE, City and County of Denver, Code Change Committee of ICC Colorado Chapter (david.renn@denvergov.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

705.7.1 Floor assemblies supporting exterior walls ~~in Type III, IV and V construction~~. ~~In Type III, IV and V construction where~~ Where a floor assembly supports gravity loads from an *exterior wall*, the *fire-resistance rating* of the portion of the floor assembly that supports the *exterior wall* shall be not less than the *fire-resistance rating* required for the *exterior wall* in Table 601. The *fire-resistance rating* provided by the portion of the floor assembly supporting and within the plane of the *exterior wall* shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an *exterior wall*, the *building elements* of the floor construction within the plane of the *exterior wall*, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior *building elements* of the applicable type of construction.

Reason: This section is intended to clarify requirements for platform framed floor/ceiling assemblies that support exterior walls, and the original proposal expanded the scoping of this section to include Type III, IV and V construction, instead of just Type III. This comment proposes to further expand this to Type I and II construction by deleting the type of construction scoping. Types I and II construction can include platform framing with cold-formed steel joists just as Types III, IV and V construction have platform framing with wood joists, so this section should apply to all construction types.This is needed since this section allows the ceiling of a floor/ceiling assembly to contribute to the fire-resistance rating provided by the portion of the floor assembly supporting and within the plane of the exterior wall. Approved proposal FS14-24 changed continuity requirements for the exterior wall to require continuity of the fire-resistance rating through the platform framed floor, while the current code language allows the exterior wall rating to stop at the underside of a floor/ceiling assembly that has the same rating as the wall. If this section isn't expanded to include Types I and II the ceiling contribution would not be allowed and it would be very difficult to continue the wall rating through the platform framed floor since the interior gypsum board would have to be continued around C-shaped joists, which is difficult, if not impossible, to achieve.

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

Justification for no cost impact:

This comment expands the scoping to include Type I and II construction to allow the ceiling membrane to count towards the exterior wall rating. This is essentially the same as the current continuity requirements in 705.6 that allow the fire-resistance rating of an exterior wall to stop at the underside of a floor/ceiling assembly that has an equal or greater rating. Therefore, there is no cost impact relative to current code language.

FS16-24

IBC: 705.7.1, 705.8 (New)

Proposed Change as Submitted

Proponents: David Renn, PE, SE, City and County of Denver, Colorado Chapter Code Development Committee (david.renn@denvergov.org)

2024 International Building Code

Revise as follows:

~~705.7.1~~ 705.8.1 **Floor assemblies in Type III construction.** In Type III construction where a floor assembly supports gravity loads from an *exterior wall*, the~~*fire-resistance rating* of the portion of the floor assembly that supports the *exterior wall* shall be not less than the *fire-resistance rating* required for the *exterior wall* in Table 601. The~~*fire-resistance rating* provided by the portion of the floor assembly supporting and within the plane of the *exterior wall* shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an *exterior wall*, the *building elements* of the floor construction within the plane of the *exterior wall*, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior *building elements* of Type III construction.

Add new text as follows:

705.8 Supporting construction. The supporting construction for an exterior wall shall have a fire-resistance rating as required by Section 704.1.1.

Reason: Currently, there is no specific requirement in Section 705 for supporting construction of exterior walls. However, such supporting construction must still meet the requirement of 704.1.1 that "The fire-resistance ratings of supporting structural members and assemblies shall be not less than the ratings required for the fire-resistance-rated assemblies supported by the structural members." The fire-resistance rating continuity requirements in 705.6 and the structural stability requirements of 705.7 essentially require supporting construction within the plane of an exterior wall to have the same fire-resistance rating as the wall supported. However, there are often cases where a fire-resistance rated exterior curtain wall is supported by a floor or beam that is inside the exterior wall, which is not covered by these sections. Also, where exterior walls step back at an upper floor, the exterior wall is supported on a floor or beam below the wall. For these cases, 704.1.1 currently requires the supporting construction to have a fire-resistance rating not less than the wall supported, but this is often missed by designers.

As an example, a 5-story Type III building could have a set-back exterior wall at the 5th story that is a bearing wall for the roof, and this wall requires a 2-hour fire-resistance rating per Table 601. Designers often miss that the floor or beam supporting this wall at Level 5 also needs to have a 2-hour fire-resistance rating, as well as all supporting construction below this floor or beam down to the foundation. When this is discovered in plan review, there are significant changes needed to the drawings to meet the requirements. This proposal is intended to avoid this by providing a direct reference to 704.1.1 in a new supporting construction section, 705.8, which will located after 705.7 that includes structural stability requirements for lateral bracing of the wall.

Current Section 705.7.1 for floor assemblies in Type III construction is relocated to be a subsection to the new supporting construction section since it addresses supporting construction requirements directly. Some wording in this section is proposed to be deleted since it is redundant with the new 705.8 section.

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

Justification for no cost impact:

This proposal is a clarification with a pointer to an existing requirement, so there is no cost impact.

Public Hearing Results (CAH1)

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

Committee Modification:

705.8.1 Floor assemblies in Type III construction.
In Type III construction where a portion of a floor assembly within the plane of the *exterior wall* supports gravity loads from an *exterior wall*, the *fire-resistance rating* provided by the portion of the floor assembly ~~supporting and within the plane of the *exterior wall*~~ shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an *exterior wall*, the *building elements* of the floor construction within the plane of the *exterior wall*, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior *building elements* of Type III construction.

Committee Reason: The committee determined that the proposed modifications fix the issue in the original proposal by adding a "portion of a floor". The committee agreed that the added text for supporting the construction of exterior walls is needed (Vote: 11-0).

FS16-24

Individual Consideration Agenda

Comment 1:

IBC: 705.8, 705.8.1

Proponents: David Renn, PE, SE, City and County of Denver, Code Change Committee of ICC Colorado Chapter (david.renn@denvergov.org); Edward Lisinski, American Wood Council, American Wood Council (elisinski@awc.org) requests As Modified by Committee (AMC2)

Further modify as follows:

2024 International Building Code

705.8 Supporting construction. The supporting construction for ~~an exterior wall~~ *exterior walls* and parapets shall have a ~~fire-resistance rating~~ *fire-resistance rating* as required by Section 704.1.1.

705.8.1 Floor assemblies in Type III construction. In Type III construction where a portion of a floor assembly within the plane of the *exterior wall* supports gravity loads from an *exterior wall*, the *fire-resistance rating* provided by the portion of the floor assembly shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an *exterior wall*, the *building elements* of the floor construction within the plane of the *exterior wall*, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior *building elements* of Type III construction.

Reason: RENN: The original proposal includes supporting construction requirements for exterior walls. This comment expands this to include supporting construction for parapets. This is needed to correlate with approved FS17-24 that includes requirements for platform framed roofs that support fire-resistance rated parapets. (Note that the new section in FS17-24 is proposed to be a subsection of 705.8 in a separate comment for FS17-24.)

This comment also makes editorial changes to put defined terms in italics.

LISINSKI: This public comment is to coordinate the approved FS16-24, which created a new section 705.8, with action taken on FS17-24. The approval

for FS17-24 added requirements for supporting of parapets, and therefore parapets need to be added to the charging language of this section. This is intended to just be editorial to coordinate with action taken in Committee Action Heating #1.

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

Justification for no cost impact:

RENN: This proposal adds supporting construction requirements for parapets in new section 705.8, but these requirements are already in the code in 704.1.1 that this new section references. Therefore, there is no change to the cost of construction.

LISINSKI: This is an editorial proposal to coordinate with action taken on FS17-24.

Comment (CAH2)# 189

FS17-24

IBC: 705.7.2 (New)

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org)

2024 International Building Code

Add new text as follows:

705.7.2 Roof assemblies supporting parapets in Type III, IV and V construction. In Type III, IV and V construction where a roof assembly supports gravity loads from a parapet, the *fire-resistance rating* of the portion of the roof assembly that supports the parapet shall be not less than the *fire-resistance rating* required for the parapet in Section 705.12. The *fire-resistance rating* provided by the portion of the roof assembly supporting the parapet shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a roof assembly supports gravity loads from a parapet, the *building elements* of the roof construction within the plane of the *exterior wall*, including but not limited to, rim joists, rim boards, and blocking, shall be in accordance with the requirements for roof assemblies of the applicable type of construction.

Reason: The proposed new section adds criteria that parallels Section 705.7.1, except that Section 705.7.1 is specific to floor assemblies supporting an exterior wall above. This change is necessary to clarify that the same criteria would also apply to a roof assembly supporting a parapet above. This is further necessary because parapet construction is addressed by the requirements of Section 705.12 and does not fall under the definition of exterior wall. The change clarifies that fire resistance is permitted to include the contribution of the ceiling membrane when considering exposure from the inside, just as it is for floor assemblies in platform construction.

AWC has a separate change proposal to Section 705.6 that provides general language in support of the concept of continuity of fire-resistance rating for roof assemblies supporting a parapet as it occurs in typical platform construction.

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

Justification for no cost impact:

This code change proposal provides clarification that roof assemblies supporting a parapet above shall have the same criteria as floor assemblies supporting an exterior wall above.

FS17-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee indicated that the proposal clarifies the code requirements for roof assemblies supporting parapets in Type III, IV and V construction. One of the committee members had an issue with what requirements are intended in the proposed text "Where a roof assembly supports gravity loads from a parapet, the building elements of the roof construction within the plane of the exterior wall, including but not limited to, rim joists, rim boards, and blocking, shall be in accordance with the requirements for roof assemblies of the applicable type of construction." (Vote: 10-1).

FS17-24

Individual Consideration Agenda

Comment 1:

IBC: 705.7.2

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

Modify as follows:

2024 International Building Code

705.7.2 Roof assemblies supporting parapets in Type III, IV and V construction. In Type III, IV and V construction where a portion of a roof assembly within the plane of the *exterior wall* supports gravity loads from a parapet, the *fire-resistance rating* ~~of the portion of the roof assembly that supports the parapet shall be not less than the *fire-resistance rating* required for the parapet in Section 705.12. The *fire-resistance rating*~~ provided by the portion of the roof assembly supporting and within the plane of the parapet shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a roof assembly supports gravity loads from a parapet, the *building elements* of the roof construction within the plane of the *exterior wall*, including but not limited to, rim joists, rim boards, and blocking, shall be in accordance with the requirements for roof assemblies of the applicable type of construction.

Reason: This change is editorial to coordinate this proposal with action taken on FS16-24 in CAH1. This edits the code language to match 705.8.1.

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

Justification for no cost impact:

This proposal is editorial to coordinate with action taken on FS16-24.

Comment (CAH2)# 151

Comment 2:

IBC: 705.7.2

Proponents: David Renn, PE, SE, City and County of Denver, Code Change Committee of ICC Colorado Chapter (david.renn@denvergov.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

705.7.2 Roof assemblies supporting parapets ~~in Type III, IV and V construction.~~ ~~In Type III, IV and V construction where~~ Where a portion of a roof assembly within the plane of the *exterior wall* supports gravity loads from a parapet, the ~~*fire-resistance rating* of the portion of the roof assembly that supports the parapet shall be not less than the *fire-resistance rating* required for the parapet in Section 705.12. The~~ *fire-resistance rating* provided by the portion of the roof assembly ~~supporting the parapet~~ shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a roof assembly supports gravity loads from a parapet, the *building elements* of the roof construction within the plane of the *exterior wall*, including but not limited to, rim joists, rim boards, and blocking, shall be in accordance with the requirements for roof assemblies of the applicable type of construction.

Reason: This section is intended to clarify requirements for platform framed roof/ceiling assemblies that support parapets, and the original proposal includes Type III, IV and V construction. This comment proposes to expand this to Type I and II construction by deleting

the type of construction scoping. Types I and II construction can include platform framing with cold-formed steel joists just as Types III, IV and V construction have platform framing with wood joists, so this section should apply to all construction types.
This is needed since this section allows the ceiling of a roof/ceiling assembly to contribute to the fire-resistance rating provided by the portion of the roof assembly supporting and within the plane of the exterior wall. Approved proposal FS14-24 changed continuity requirements for the exterior wall to require continuity of the fire-resistance rating through the platform framed roof, while the current code language allows the exterior wall rating to stop at the underside of a roof/ceiling assembly that has the same rating as the wall. If this section isn't expanded to include Types I and II the ceiling contribution would not be allowed and it would be very difficult to continue the wall rating through the platformed framed roof since the interior gypsum board would have to be continued around C-shaped joists, which is difficult, if not impossible, to achieve.This comment also includes wording changes to match wording in FS16-24 that includes a related floor assembly section, which was approved as modified by committee. The wording regarding required fire-resistance rating of the portion of the roof assembly supporting the parapet is removed since this is already covered by new section 705.8 that is in FS16-24.

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

Justification for no cost impact:

This comment expands the scoping to include Type I and II construction to allow the ceiling membrane to count towards the exterior wall rating. This is essentially the same as the current continuity requirements in 705.6 that allow the fire-resistance rating of an exterior wall to stop at the underside of a roof/ceiling assembly that has an equal or greater rating. Therefore, there is no cost impact relative to current code language. Other changes in this comment are editorial to match approved FS16-24.

Comment (CAH2)# 188

FS21-24 Part I

IBC: 706.1, 707.1, 708.1, 709.1, 710.1, 711.1, TABLE 307.1.1, 402.4.2.2, 402.4.2.3, [BE] 402.8.7, 402.4.2.1, 404.6, 405.4.2, 405.4.3, 406.3.1, 406.6.4.1, 407.3, [BE] 407.4.4.2, [BE] 407.5, 408.7, 410.4.1, 410.4.2, 412.4.1, 412.3.4, 420.2, 420.3, 420.6, 422.2, 503.1, 508.4.4.1, 509.4.1, 510.7.1, 510.8, 706.1.1, 713.2, 713.5, 713.11, 713.13.3, 713.13.4, 901.7, 909.20.2, 909.20.6.1, 913.2.1, 1009.6.4, 1023.2, 1023.3.1, 1023.12.1, 1024.3, 1026.2, 1028.2, 1030.1.1.1, 3005.4, 3006.3, 3104.5.1; IFC: [BF] 909.20.2, [BF] 909.20.5.1, [BE] 1023.2, [BE] 1023.3.1, [BE] 1023.12.1, [BE] 1026.2, [BE] 1028.2, [BE] 1030.1.1.1

Proposed Change as Submitted

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

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE FIRE SAFETY CODE COMMITTEE. PART II WILL BE HEARD BY THE FIRE CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2024 International Building Code

Revise as follows:

706.1 General. *Fire walls* required by this code or the *International Fire Code* shall be constructed in accordance with Sections 706.2 through 706.11. The extent and location of such *fire walls* shall provide a complete separation. Where a *fire wall* separates occupancies that are required to be separated by a *fire barrier* wall, the most restrictive requirements of each separation shall apply.

707.1 General. *Fire barriers* ~~installed as~~ required ~~elsewhere in~~by this code or the *International Fire Code* shall comply with this section.

708.1 General. The following wall assemblies shall comply with this section:

1. Separation walls as required by Section 420.2 for Group I-1 and Group R occupancies.
2. Walls separating tenant spaces in *covered and open mall buildings* as required by Section 402.4.2.1.
3. *Corridor* walls as required by Section 1020.3.
4. Enclosed elevator lobby separation as required by Section 3006.3.
5. Egress balconies as required by Section 1021.2
6. Walls separating *ambulatory care facilities* from adjacent spaces, *corridors* or tenants as required by Section 422.2.
7. Walls separating *dwelling and sleeping units* in Groups R-1 and R-2 in accordance with Sections 907.2.8.1 and 907.2.9.1.
8. Vestibules in accordance with Section 1028.2.

Revise as follows:

709.1 General. Vertical and horizontal *smoke barriers* required by this code or the *International Fire Code* shall comply with this section.

710.1 General. *Smoke partitions* ~~installed as~~ required ~~elsewhere in the~~by this code or the *International Fire Code* shall comply with this section.

711.1 General. *Horizontal assemblies* required by this code or the *International Fire Code* shall comply with Section 711.2. Nonfire-resistance-rated floor and *roof assemblies* shall comply with Section 711.3.

TABLE 307.1.1 HAZARDOUS MATERIALS EXEMPTIONS[a]

MATERIAL CLASSIFICATION	OCCUPANCY OR APPLICATION	EXEMPTION

Combustible fiber	Baled cotton	Densely packed baled cotton shall not be classified as combustible fiber, provided that the bales comply with the packing requirements of ISO 8115.
Corrosive	Building materials	The quantity of commonly used building materials that are classified as corrosive materials is not limited.
	Personal and household products	The quantity of personal and household products that are classified as corrosive materials is not limited in retail displays, provided that the products are in original packaging.
	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Explosives	Groups B, F, M and S	Storage of special industrial explosive devices is not limited.
	Groups M and R-3	Storage of black powder, smokeless propellant and small arms primers is not limited.
Flammable and combustible liquids and gases	Aerosols	Buildings and structures occupied for the storage of aerosol products, aerosol cooking spray products, or plastic aerosol 3 products shall be classified as Group S-1.
	Alcoholic beverages	The quantity of alcoholic beverages in liquor stores and distributors without bulk storage is not limited.
		The quantity of alcoholic beverages in distilling or brewing of beverages is not limited.
		The storage quantity of beer, distilled spirits and wines in barrels and casks is not limited.
		The quantity of alcoholic beverages in retail and wholesale sales occupancies is not limited. To qualify for this allowance, beverages shall be packaged in individual containers not exceeding 1.3 gallons.
	Cleaning establishments with combustible liquid solvents	The quantity of combustible liquid solvents used in closed systems and having a flash point at or above 140ºF is not limited. To qualify for this allowance, equipment shall be listed by an approved testing agency and the occupancy shall be separated from all other areas of the building by not less than 1-hour fire barriers ~~constructed in accordance with Section 707~~ or ~~1-hour~~ horizontal assemblies ~~constructed in accordance with Section 711~~, or both
		The quantity of combustible liquid solvents having a flash point at or above 200ºF is not limited.
	Closed piping systems	The quantity of flammable and combustible liquids and gases utilized for the operation of machinery or equipment is not limited.
	Fuel	The quantity of liquid or gaseous fuel in fuel tanks on vehicles or motorized equipment is not limited.
		The quantity of gaseous fuels in piping systems and fixed appliances regulated by the International Fuel Gas Code is not limited.
		The quantity of liquid fuels in piping systems and fixed appliances regulated by the International Mechanical Code is not limited.
	Flammable finishing operations using flammable and combustible liquids	Buildings and structures occupied for the application of flammable finishes shall comply with Section 416.
	Fuel oil	The quantity of fuel oil storage complying with Section 605.4.2 of the *International Fire Code* is not limited. .
	Hand sanitizer	The quantity of alcohol-based hand rubs (ABHR) classified as Class I or II liquids in dispensers installed in accordance with Sections 5705.5 and 5705.5.1 of the *International Fire Code* is not limited. The location of the ABHR dispensers shall be provided in the construction documents.
	Retail and wholesale sales occupancies with flammable and combustible liquids	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Highly toxic and toxic materials	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Any	Agricultural materials	The quantity of agricultural materials stored or utilized for agricultural purposes on the premises is not limited.
	Energy storage	The quantity of hazardous materials in stationary storage battery systems is not limited.
		The quantity of hazardous materials in stationary fuel cell power systems is not limited.
		The quantity of hazardous materials in capacitor energy storage systems is not limited.
	Refrigeration Systems	The quantity of refrigerants in refrigeration systems is not limited.

For SI: 1 gallon = 3.785L, °C = (°F - 32)/1.8.

a. Exempted materials and conditions listed in this table are required to comply with applicable provisions of the International Fire Code.

402.4.2.2 Anchor building separation. An *anchor building* shall be separated from the *covered* or *open mall building* by *fire walls* ~~complying with Section 706~~. **Exceptions:**

1. *Anchor buildings* of not more than three *stories above grade plane* that have an occupancy classification the same as that permitted for tenants of the *mall building* shall be separated by not less than 2-hour fire-resistance-rated *fire barriers* ~~complying with Section 707~~.
2. The *exterior walls* of *anchor buildings* separated from an *open mall building* by an *open mall* shall comply with Table 705.5.

402.4.2.3 Parking garages. An attached garage for the storage of passenger vehicles having a capacity of not more than nine *persons* and *open parking garages* shall be considered as a separate *building* where it is separated from the *covered or open mall building* or *anchor building* by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.
Parking garages, which are separated from *covered mall buildings*, *open mall buildings* or *anchor buildings*, shall comply with the provisions of Table 705.5.

Pedestrian walkways and tunnels that connect garages to mall *buildings* or *anchor buildings* shall be constructed in accordance with Section 3104.

[BE] 402.8.7 Service areas fronting on exit passageways. Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into *exit passageways*, provided that the *exit passageway* is separated from such rooms with not less than 1-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. The *fire protection rating* of openings in the *fire barriers* shall be not less than 1 hour.

402.4.2.1 Tenant separations. Each tenant space shall be separated from other tenant spaces by ~~a~~ *fire partitions* ~~*partition* complying with Section 708~~. A tenant separation wall is not required between any tenant space and the *mall*.

404.6 Enclosure of atriums. *Atrium* spaces shall be separated from adjacent spaces by a 1-hour *fire barrier* ~~constructed in accordance with Section 707~~ or a *horizontal assembly* ~~constructed in accordance with Section 711~~, or both. **Exceptions:**

1. A *fire barrier* is not required where a glass wall forming a *smoke partition* is provided. The glass wall shall comply with all of the following:
   1.1. *Automatic* sprinklers are provided along both sides of the separation wall and doors, or on the room side only if there is not a walkway on the *atrium* side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction.
   1.2. The glass wall shall be installed in a gasketed frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates.
   1.3. Where glass doors are provided in the glass wall, they shall be either *self-closing* or automatic-closing.
2. A *fire barrier* is not required where a glass-block wall assembly complying with Section 2110 and having a $^{3}/_{4}$-hour *fire protection rating* is provided.
3. A *fire barrier* is not required between the *atrium* and the adjoining spaces of up to three floors of the *atrium* provided that such spaces are accounted for in the design of the smoke control system.
4. In other than Group I-2 and Group I-1, Condition 2, a *fire barrier* is not required between the *atrium* and the adjoining spaces where the *atrium* is not required to be provided with a smoke control system.

5. In Group I-2 and Group I-1, Condition 2, a *fire barrier* is not required between the *atrium* and the adjoining spaces, other than care recipient sleeping or treatment rooms, for up to three *stories* of the *atrium* provided that such spaces are accounted for in the design of the smoke control system and do not provide access to care recipient sleeping or treatment rooms.
6. A *horizontal assembly* is not required between the *atrium* and openings for escalators complying with Section 712.1.3.
7. A *horizontal assembly* is not required between the *atrium* and openings for *exit access stairways* and *ramps* complying with Item 4 of Section 1019.3.

405.4.2 Smoke barrier penetration. The compartments shall be separated from each other by ~~a~~ *smoke* barriers ~~*barrier* in accordance with Section 709~~. Penetrations between the two compartments shall be limited to plumbing and electrical piping and conduit that are firestopped in accordance with Section 714. Doorways shall be protected by *fire door assemblies* that comply with Section 716, automatic-closing by smoke detection in accordance with Section 716.2.6.6 and installed in accordance with NFPA 105 and Section 716.2.2.1. Where provided, each compartment shall have an air supply and an exhaust system independent of the other compartments.

405.4.3 Elevators. Where elevators are provided, each compartment shall have *direct access* to an elevator. Where an elevator serves more than one compartment, an enclosed elevator lobby shall be provided and shall be separated from each compartment by a *smoke barrier* ~~in accordance with Section 709~~. Doorways in the *smoke barrier* shall be protected by *fire door assemblies* that comply with Section 716, shall comply with the smoke and draft control assembly requirements of Section 716.2.2.1 with the UL 1784 test conducted without an artificial bottom seal, and shall be automatic-closing by smoke detection in accordance with Section 716.2.6.6.

406.3.1 Classification. *Private garages* and carports shall be classified as Group U occupancies. Each *private garage* shall be not greater than 1,000 square feet (93 m^2) in area. Multiple *private garages* are permitted in a *building* where each *private garage* is separated from the other *private garages* by not less than 1-hour *fire barriers* ~~in accordance with Section 707,~~ or ~~1-hour~~ *horizontal assemblies* ~~in accordance with Section 711~~, or both.

406.6.4.1 Separation. *Mechanical-access enclosed parking garages* shall be separated from other occupancies and accessory uses by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or ~~by not less than 2-hour~~ *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.

407.3 Corridor wall construction. Corridor walls shall be constructed as *smoke partitions* ~~in accordance with Section 710~~.

[BE] 407.4.4.2 Separation. *Care suites* shall be separated from other portions of the *building*, including other *care suites*, by ~~a~~ *smoke partitions* ~~*partition* complying with Section 710~~.

[BE] 407.5 Smoke barriers. *Smoke barriers* shall be provided to subdivide every *story* used by *persons* receiving care, treatment or sleeping into not fewer than two *smoke compartments. Smoke barriers* shall be provided to subdivide other *stories* with an *occupant load* of 50 or more *persons*, into not fewer than two *smoke compartments.* ~~The *smoke barrier* shall be in accordance with Section 709.~~

408.7 Security glazing. In occupancies in Group I-3, windows and doors in 1-hour *fire barriers* ~~constructed in accordance with Section 707~~, *fire partitions* ~~constructed in accordance with Section 708~~ and *smoke barriers* ~~constructed in accordance with Section 709~~ shall be permitted to have security glazing installed provided that the following conditions are met.

1. Individual panels of glazing shall not exceed 1,296 square inches (0.84 m^2).
2. The glazing shall be protected on both sides by an *automatic sprinkler system*. The sprinkler system shall be designed to, when actuated, wet completely the entire surface of any glazing affected by fire.
3. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler system operates.
4. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic sprinklers and the glazing.

410.4.1 Separation from stage. The *stage* shall be separated from dressing rooms, scene docks, property rooms, workshops,

storerooms and compartments contiguous to the *stage* and other parts of the *building* by *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. The *fire-resistance rating* shall be not less than 2 hours for stage heights greater than 50 feet (15 240 mm) and not less than 1 hour for *stage* heights of 50 feet (15 240 mm) or less.

410.4.2 Separation from each other. Dressing rooms, scene docks, property rooms, workshops, storerooms and compartments contiguous to the *stage* shall be separated from each other by not less than 1-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.

412.4.1 Fire separation. A hangar shall not be attached to a *dwelling* unless separated by ~~a~~ not less than 1-hour *fire barriers* ~~*barrier* having a *fire-resistance rating* of not less than 1 hour~~. Such separation shall be continuous from the foundation to the underside of the roof and unpierced except for doors leading to the *dwelling unit*. Doors into the *dwelling unit* shall be equipped with *self-closing* devices and conform to the requirements of Section 716 with a noncombustible raised sill not less than 4 inches (102 mm) in height. Openings from a hangar directly into a room used for sleeping purposes shall not be permitted.

412.3.4 Heating equipment. Heating equipment shall be placed in another room separated by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. Entrance shall be from the outside or by means of a vestibule providing a two-doorway separation. **Exceptions:**

1. Unit heaters and vented infrared radiant heating equipment suspended not less than 10 feet (3048 mm) above the upper surface of wings or engine enclosures of the highest aircraft that are permitted to be housed in the hangar need not be located in a separate room provided that they are mounted not less than 8 feet (2438 mm) above the floor in shops, offices and other sections of the hangar communicating with storage or service areas.
2. Entrance to the separated room shall be permitted by a single interior door provided that the sources of ignition in the appliances are not less than 18 inches (457 mm) above the floor.

420.2 Separation walls. Walls separating *dwelling units* in the same building, walls separating *sleeping units* in the same *building* , walls separating *dwelling units* from *sleeping units* in the same *building* and walls separating *dwelling* or *sleeping units* from other occupancies contiguous to them in the same building shall be constructed as *fire partitions* ~~in accordance with Section 708~~.

420.3 Horizontal separation. Floor assemblies separating *dwelling units* in the same *buildings*, floor assemblies separating *sleeping units* in the same *building* , floor assemblies separating *dwelling units* from *sleeping units* in the same *building* and floor assemblies separating dwelling or *sleeping units* from other occupancies contiguous to them in the same *building* shall be constructed as *horizontal assemblies* ~~in accordance with Section 711~~.

420.6 Smoke barriers in Group I-1, Condition 2. *Smoke barriers* shall be provided in Group I-1, Condition 2 to subdivide every *story* used by *persons* receiving care, treatment or sleeping and to provide other *stories* with an *occupant load* of 50 or more *persons*, into not fewer than two *smoke compartments*. Such *stories* shall be divided into *smoke compartments* with an area of not more than 22,500 square feet (2092 m^2) and the distance of travel from any point in a *smoke compartment* to a *smoke barrier* door shall not exceed 200 feet (60 960 mm). ~~The *smoke barrier* shall be in accordance with Section 709.~~

422.2 Separation. *Ambulatory care facilities* where the potential for four or more care recipients are to be *incapable of self-preservation* at any time shall be separated from adjacent spaces, *corridors* or tenants with a *fire partition* ~~installed in accordance with Section 708~~.

503.1 General. Unless otherwise specifically modified in Chapter 4 and this chapter, *building height*, number of *stories* and *building area* shall not exceed the limits specified in Sections 504 and 506 based on the type of construction as determined by Section 602 and the occupancies as determined by Section 302 except as modified hereafter. *Building height*, number of *stories* and *building area* provisions shall be applied independently. For the purposes of determining area limitations, height limitations and type of construction, each portion of a building separated by one or more *fire walls* ~~complying with Section 706~~ shall be considered to be a separate building.

508.4.4.1 Construction. Required separations shall be *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both, so as to completely separate adjacent occupancies. *Mass timber* elements serving as *fire barriers* or *horizontal assemblies* to separate occupancies in Type IV-B or IV-C construction shall be separated from the interior of

the *building* with an *approved* thermal barrier consisting of *gypsum board* that is not less than $^{1}/_{2}$ inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275. **Exception:** A thermal barrier shall not be required on the top of horizontal assemblies serving as occupancy separations.

509.4.1 Separation. Where Table 509.1 specifies a fire-resistance-rated separation, the incidental uses shall be separated from the remainder of the *building* by ~~a *fire* barrier constructed in accordance with Section 707~~ or ~~a *horizontal* assembly constructed in accordance with Section 711~~, or both. Construction supporting 1-hour *fire barriers* or *horizontal assemblies* used for incidental use separations in *buildings* of Type IIB, IIIB and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

510.7.1 Fire separation. *Fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~ between the parking occupancy and the upper occupancy shall correspond to the required *fire-resistance rating* prescribed in Table 508.4 for the uses involved. The type of construction shall apply to each occupancy individually, except that structural members, including main bracing within the open parking *structure*, which is necessary to support the upper occupancy, shall be protected with the more restrictive fire-resistance-rated assemblies of the groups involved as shown in Table 601. *Means of egress* for the upper occupancy shall conform to Chapter 10 and shall be separated from the parking occupancy by not less than 2-hour *fire barriers* ~~having not less than a 2-hour *fire-resistance rating* as required by Section 707 with *self-closing* doors complying with Section 716~~ or *horizontal assemblies* ~~having not less than a 2-hour *fire-resistance rating* as required by Section 711~~, or both with *self-closing* doors complying with Section 716. *Means of egress* from the *open parking garage* shall comply with Section 406.5.

510.8 Group B or M buildings with Group S-2 open parking garage above. Group B or M occupancies located below a Group S-2 *open parking garage* of a lesser type of construction shall be considered as a separate and distinct *building* from the Group S-2 *open parking garage* for the purpose of determining the type of construction where the following conditions are met:

1. The *buildings* are separated with a *horizontal assembly* having a *fire-resistance rating* of not less than 2 hours.
2. The occupancies in the *building* below the *horizontal assembly* are limited to Groups B and M.
3. The occupancy above the *horizontal assembly* is limited to a Group S-2 *open parking garage*.
4. The *building* below the *horizontal assembly* is of Type IA construction. **Exception:** The *building* below the *horizontal assembly* shall be permitted to be of Type IB or II construction, but not less than the type of construction required for the Group S-2 *open parking garage* above, where the *building* below is not greater than *one story* in height above *grade plane.*
5. The height and area of the *building* below the *horizontal assembly* does not exceed the limits set forth in Section 503.
6. The height and area of the Group S-2 *open parking garage* does not exceed the limits set forth in Section 406.5. The height, in both feet and *stories*, of the Group S-2 *open parking garage* shall be measured from *grade plane* and shall include the *building* below the *horizontal assembly*.
7. *Exits* serving the Group S-2 *open parking garage* ~~shall~~ discharge at grade with direct and unobstructed access to a street or *public way* and are separated from the *building* below the *horizontal assembly* by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or ~~2-hour *horizontal assemblies* constructed in accordance with Section 711~~, or both.

706.1.1 Party walls. Any wall located on a *lot line* between adjacent *buildings*, which is used or adapted for *joint* service between the two *buildings*, shall be constructed as a *fire wall* ~~in accordance with Section 706~~. Party walls shall be constructed without openings and shall create separate *buildings*. **Exceptions:**

1. Openings in a party wall separating an *anchor building* and a *mall* shall be in accordance with Section 402.4.2.2.1.
2. Party walls and *fire walls* are not required on *lot lines* dividing a *building* for ownership purposes where the aggregate height and area of the portions of the *building* located on both sides of the *lot line* do not exceed the maximum height and area requirements of this code. For the *building official's* review and approval, the official shall be provided with copies of dedicated access easements and contractual agreements that permit the *owners* of portions of the building located on either side of the *lot line* access to the other side for purposes of maintaining fire and *life safety systems* necessary for the operation of the building.

713.2 Construction. *Shaft enclosures* shall be constructed as *fire barriers* ~~in accordance with Section 707~~ or *horizontal assemblies* ~~in accordance with Section 711~~, or both.

713.5 Continuity. *Shaft enclosures* shall be constructed as *fire barriers* ~~in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both, and shall have continuity in accordance with Section 707.5 for *fire barriers* or Section 711.2.2 for *horizontal assemblies*, as applicable.

713.11 Enclosure at the bottom. *Shafts* that do not extend to the bottom of the *building* or *structure* shall comply with one of the following:

1. Be enclosed at the lowest level with construction of the same *fire-resistance rating* as the *lowest floor* through which the *shaft* passes, but not less than the rating required for the *shaft enclosure.*
2. Terminate in a room having a use related to the purpose of the *shaft*. The room shall be separated from the remainder of the *building* by *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. The *fire-resistance rating* and opening protectives shall be not less than the protection required for the *shaft enclosure*.
3. Be protected by *approved fire dampers* installed in accordance with their listing at the *lowest floor* level within the *shaft enclosure*.

Exceptions:

1. The fire-resistance-rated room separation is not required, provided that the only openings in or penetrations of the *shaft enclosure* to the interior of the *building* occur at the bottom. The bottom of the *shaft* shall be closed off around the penetrating items with materials permitted by Section 718.3.1 for *draftstops* , or the room shall be provided with an *approved automatic sprinkler system*.
2. A *shaft enclosure* containing a waste or linen chute shall not be used for any other purpose and shall discharge in a room protected in accordance with Section 713.13.4.
3. The fire-resistance-rated room separation and the protection at the bottom of the *shaft* are not required provided that there are no combustibles in the *shaft* and there are no openings or other penetrations through the *shaft enclosure* to the interior of the *building*.

713.13.3 Chute access rooms. Access openings for waste, recycling or linen chutes shall be located in rooms or compartments enclosed by not less than 1-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. Openings into the access rooms shall be protected by opening protectives having a *fire protection rating* of not less than $^3/_4$ hour. Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 716.2.6.6. The room or compartment shall be configured to allow the access door to the room or compartment to close and latch with the access panel to the chute in any position.

713.13.4 Chute discharge room. Waste, recycling or linen chutes shall discharge into an enclosed room separated by *fire barriers* with a *fire-resistance rating* not less than the required fire rating of the *shaft enclosure* ~~and constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. Openings into the discharge room from the remainder of the *building* shall be protected by opening protectives having a *fire protection rating* based on the fire rating of the *shaft enclosure* in accordance with Tables 716.1(2) and 716.1(3) . Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 716.2.6.6. Waste chutes shall not terminate in an incinerator room. Waste and linen rooms that are not provided with chutes need only comply with Table 509.1.

901.7 Fire areas. Where *buildings*, or portions thereof, are divided into *fire areas* so as not to exceed the limits established for requiring a *fire protection system* in accordance with this chapter, such *fire areas* shall be separated by *fire walls* ~~constructed in accordance with Section 706~~, *fire barriers* ~~constructed in accordance with Section 707~~, or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or a combination thereof having a *fire-resistance rating* of not less than that determined in accordance with Section 707.3.10.

909.20.2 Construction. The *smokeproof enclosure* shall be separated from the remainder of the *building* by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. Openings are not permitted other than the required *means of egress* doors. The vestibule shall be separated from the *stairway* or *ramp* by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. The open exterior balcony shall be constructed in accordance with the *fire-resistance rating* requirements for floor assemblies.

909.20.6.1 Ventilation systems. *Smokeproof enclosure* ventilation systems shall be independent of other *building* ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following:

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the *building* and directly connected to the *smokeproof enclosure* or connected to the *smokeproof enclosure* by ductwork enclosed by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the *smokeproof enclosure* with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.
3. Equipment, control wiring, power wiring and ductwork shall be located within the *building* if separated from the remainder of the *building*, including other mechanical equipment, by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.

Exception:

1. Control wiring and power wiring located outside of a 2-hour *fire barrier* construction shall be protected using any one of the following methods:
   1.1. Cables used for survivability of required critical circuits shall be *listed* in accordance with UL 2196 and shall have a *fire-resistance rating* of not less than 2 hours.
   1.2. Where encased with not less than 2 inches (51 mm) of concrete.
   1.3. *Electrical circuit protective systems* shall have a *fire-resistance rating* of not less than 2 hours. *Electrical circuit protective systems* shall be installed in accordance with their listing requirements.

913.2.1 Protection of fire pump rooms. Fire pumps shall be located in rooms that are separated from all other areas of the *building* by 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or ~~2-hour~~ *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. **Exceptions:**

1. In other than *high-rise buildings*, separation by not less than 1-hour *fire barriers* ~~constructed in accordance with Section 707~~ or ~~1-hour~~ *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both, shall be permitted in *buildings* equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Separation is not required for fire pumps physically separated in accordance with NFPA 20.

1009.6.4 Separation. Each *area of refuge* shall be separated from the remainder of the *story* by a *smoke barrier* ~~complying with Section 709~~ or a *horizontal exit* complying with Section 1026. Each *area of refuge* shall be designed to minimize the intrusion of smoke. **Exceptions:**

1. *Areas of refuge* located within an enclosure for *interior exit stairways* complying with Section 1023.
2. *Areas of refuge* in outdoor *facilities* where *exit access* is essentially open to the outside.

1023.2 Construction. Enclosures for interior exit *stairways* and *ramps* shall be constructed as *fire barriers* ~~in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. *Interior exit stairway* and *ramp* enclosures shall have a *fire-resistance rating* of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of *stories* connected by the interior exit *stairways* or *ramps* shall include any *basements*, but not any *mezzanines*. Enclosures for interior *exit stairways* and *ramps* shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours. **Exceptions:**

1. *Interior exit stairways* and *ramps* in Group I-3 occupancies in accordance with the provisions of Section 408.3.8.
2. *Interior exit stairways* within an *atrium* enclosed in accordance with Section 404.6.
3. *Interior exit stairways* in accordance with Section 510.2.

1023.3.1 Extension. Where *interior exit stairways* and *ramps* are extended to an *exit discharge* or a *public way* by an *exit passageway*, the *interior exit stairway* and *ramp* shall be separated from the *exit passageway* by ~~a~~ *fire* barriers ~~*barrier* constructed in accordance with Section 707~~ or ~~a~~ *horizontal* assemblies ~~*assembly* constructed in accordance with Section 711~~, or both. The *fire-resistance rating* shall be not less than that required for the *interior exit stairway* and *ramp*. A *fire door assembly* complying with Section 716 shall be installed in the *fire barrier* to provide a *means of egress* from the *interior exit stairway* and *ramp* to the *exit passageway*. Openings in the *fire barrier* other than the *fire door assembly* are prohibited. Penetrations of the *fire barrier* are prohibited. **Exceptions:**

1. Penetrations of the *fire barrier* in accordance with Section 1023.5 shall be permitted.
2. Separation between an *interior exit stairway* or *ramp* and the *exit passageway* extension shall not be required where there are no openings into the *exit passageway* extension.
3. Separation between an *interior exit stairway* or *ramp* and the *exit passageway* extension shall not be required where the *interior exit stairway* and the *exit passageway* extension are pressurized in accordance with Section 909.20.4.

1023.12.1 Termination and extension. A *smokeproof enclosure* shall terminate at an *exit discharge* or a *public way*. The *smokeproof enclosure* shall be permitted to be extended by an *exit passageway* in accordance with Section 1023.3. The *exit passageway* shall be without openings other than the *fire door assembly* required by Section 1023.3.1 and those necessary for egress from the *exit passageway*. The *exit passageway* shall be separated from the remainder of the *building* by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both. **Exceptions:**

1. Openings in the *exit passageway* serving a *smokeproof enclosure* are permitted where the *exit passageway* is protected and pressurized in the same manner as the *smokeproof enclosure*, and openings are protected as required for access from other floors.
2. The *fire barrier* separating the *smokeproof enclosure* from the *exit passageway* is not required, provided that the *exit passageway* is protected and pressurized in the same manner as the *smokeproof enclosure*.
3. A *smokeproof enclosure* shall be permitted to egress through areas on the *level of exit discharge* or vestibules as permitted by Section 1028.

1024.3 Construction. *Exit passageway* enclosures shall have walls, floors and ceilings of not less than a 1-hour *fire-resistance rating*, and not less than that required for any connecting *interior exit stairway* or *ramp*. Exit passageways shall be constructed as *fire barriers* ~~in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both.

1026.2 Separation. The separation between buildings or refuge areas connected by a *horizontal exit* shall be provided by ~~a *fire wall,* complying with Section 706; or by a *fire barrier* complying with Section 707 or a *horizontal assembly* complying with Section 711, or both~~ not less than 2-hour fire walls, fire barriers or horizontal assemblies, or a combination thereof. ~~The minimum *fire-resistance rating* of the separation shall be 2 hours.~~ Opening protectives in horizontal *exits* shall also comply with Section 716. Duct and air transfer openings in a *fire wall* or *fire barrier* that serves as a *horizontal exit* shall also comply with Section 717. The *horizontal exit* separation shall extend vertically through all levels of the building unless floor assemblies have a *fire-resistance rating* of not less than 2 hours and do not have unprotected openings.

Exception: A *fire-resistance rating* is not required at horizontal *exits* between a *building* area and an above-grade *pedestrian*

walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096 mm).

Horizontal exits constructed as *fire barriers* shall be continuous from *exterior wall* to *exterior wall* so as to divide completely the floor served by the *horizontal exit*.

1028.2 Exit discharge. *Exits* shall discharge directly to the exterior of the *building*. The *exit discharge* shall be at grade or shall provide a direct path of egress travel to grade. The *exit discharge* shall not reenter a *building*. The combined use of Exceptions 1 and 2 shall not exceed 50 percent of the number and minimum width or required capacity of the required *exits*. **Exceptions:**

1. Not more than 50 percent of the number and minimum width or required capacity of *interior exit stairways* and *ramps* is permitted to egress through areas, including *atriums*, on the level of discharge provided that all of the following conditions are met:
   1.1. Discharge of *interior exit stairways* and *ramps* shall be provided with a free and unobstructed path of travel to an exterior *exit* door and such *exit* is readily visible and identifiable from the point of termination of the enclosure.
   1.2. The entire area of the *level of exit discharge* is separated from areas below by construction conforming to the *fire-resistance rating* for the enclosure.
   1.3. The egress path from the *interior exit stairway* and *ramp* on the *level of exit discharge* is protected throughout by an *approved automatic sprinkler system*. Portions of the *level of exit discharge* with access to the egress path shall be either equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of *interior exit stairways* or *ramps*.
   1.4. Where a required *interior exit stairway* or *ramp* and an *exit access stairway* or *ramp* serve the same floor level and terminate at the same *level of exit discharge*, the termination of the *exit access stairway* or *ramp* and the *exit discharge* door of the *interior exit stairway* or *ramp* shall be separated by a distance of not less than 30 feet (9144 mm) or not less than one-fourth the length of the maximum overall diagonal dimension of the *building*, whichever is less. The distance shall be measured in a straight line between the *exit discharge* door from the *interior exit stairway* or *ramp* and the last tread of the *exit access stairway* or termination of slope of the *exit access ramp*.
2. Not more than 50 percent of the number and minimum width or required capacity of the *interior exit stairways* and *ramps* is permitted to egress through a vestibule provided that all of the following conditions are met:
   2.1. The entire area of the vestibule is separated from areas below by construction conforming to the *fire-resistance rating* of the *interior exit stairway* or *ramp enclosure*.
   2.2. The depth from the exterior of the *building* is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).
   2.3. The area is separated from the remainder of the *level of exit discharge* by a *fire partition* ~~constructed in accordance with Section 708~~. **Exception:** The maximum transmitted temperature rise is not required.
   2.4. The area is used only for *means of egress* and *exits* directly to the outside.
3. *Horizontal exits* complying with Section 1026 shall not be required to discharge directly to the exterior of the *building*.

1030.1.1.1 Spaces under grandstands and bleachers. Spaces under *grandstands* or *bleachers* shall be separated by not less than 1-hour *fire barriers* ~~complying with Section 707 and~~ or *horizontal assemblies* ~~complying with Section 711 with not less than 1-hour *fire-resistance-rated* construction~~, or both. **Exceptions:**

1. Ticket booths less than 100 square feet (9.29 m^2) in area.
2. Toilet rooms.
3. Other accessory use areas 1,000 square feet (92.9 m^2) or less in area and equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

3005.4 Machine rooms, control rooms, machinery spaces, and control spaces. The following rooms and spaces shall be enclosed with *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both:

1. Machine rooms.
2. Control rooms.
3. Control spaces.
4. Machinery spaces outside of the hoistway enclosure.

The *fire-resistance rating* shall be not less than the required rating of the hoistway enclosure served by the machinery. Openings in the *fire barriers* shall be protected with assemblies having a *fire protection rating* not less than that required for the hoistway enclosure doors.

Exceptions:

1. For other than fire service access elevators and occupant evacuation elevators, where machine rooms, machinery spaces, control rooms and control spaces do not abut and do not have openings to the hoistway enclosure they serve, the *fire barriers* ~~constructed in accordance with Section 707~~ or *horizontal assemblies* ~~constructed in accordance with Section 711~~, or both, shall be permitted to be reduced to a 1-hour *fire-resistance rating*.
2. For other than fire service access elevators and occupant evacuation elevators, in *buildings* four *stories* or less above *grade plane* where machine room, machinery spaces, control rooms and control spaces do not abut and do not have openings to the hoistway enclosure they serve, the machine room, machinery spaces, control rooms and control spaces are not required to be fire-resistance rated.

3006.3 Elevator hoistway door protection. Where Section 3006.2 requires protection of the elevator hoistway doors, the protection shall be provided by one of the following:

1. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway doors from each floor with *fire partitions* ~~in accordance with Section 708~~. In addition, doors protecting openings in the fire partitions shall comply with Section 716.2.2.1. Penetrations of the fire partitions by ducts and air transfer openings shall be protected as required for *corridors* in accordance with Section 717.5.4.1.
2. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway doors from each floor by *smoke partitions* ~~in accordance with Section 710~~. In addition, doors protecting openings in the *smoke partitions* shall comply with Sections 710.5.2.2, 710.5.2.3 and 716.2.6.1. Penetrations of the *smoke partitions* by ducts and air transfer openings shall be protected as required for *corridors* in accordance with Section 717.5.4.1.
3. Additional doors or other devices shall be provided at each elevator hoistway door in accordance with Section 3002.6. Such doors or other devices shall comply with the smoke and draft control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784 without an artificial bottom seal.
4. The elevator hoistway shall be pressurized in accordance with Section 909.21.
5. A *smoke-protective curtain assembly for hoistways* shall be provided at each elevator hoistway door opening in accordance with Section 3002.6. Such curtain assemblies shall comply with the smoke and draft control requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784 without an artificial bottom seal. Such curtain assemblies shall be equipped with a control unit *listed* to UL 864. Such curtain assemblies shall comply with Section 2.11.6.3 of ASME A17.1/CSA B44. Installation and maintenance shall be in accordance with NFPA 105.

3104.5.1 Fire barriers. *Pedestrian walkways* shall be separated from the interior of the *building* by not less than 2-hour *fire barriers* constructed in accordance with ~~Section~~ Sections 707 and ~~Sections~~ 3104.5.1.1 through 3104.5.1.3.

2024 International Fire Code

Revise as follows:

[BF] 909.20.2 Construction. The *smokeproof enclosure* shall be separated from the remainder of the building by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707 of the *International Building Code*~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the *International Building Code*~~, or both. Openings are not permitted other than the required *means of egress* doors. The vestibule shall be separated from the *stairway* or *ramp* by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707 of the *International Building Code*~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the *International Building Code*,~~ or both. The open exterior balcony shall be constructed in accordance with the *fire-resistance-rating* requirements for floor assemblies.

[BF] 909.20.5.1 Ventilation systems. *Smokeproof enclosure* ventilation systems shall be independent of other building ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following:

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the *smokeproof enclosure* or connected to the *smokeproof enclosure* by ductwork enclosed by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707 of the *International Building Code*~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the *International Building Code*,~~ or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the *smokeproof enclosure* with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707 of the *International Building Code*~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the *International Building Code*~~, or both.
3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707 of the *International Building Code*~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the *International Building Code*,~~ or both.

Exception: Control wiring and power wiring located outside of a 2-hour *fire barrier* construction shall be protected using any one of the following methods:

1. Cables used for survivability of required *critical circuits* shall be *listed* in accordance with UL 2196 and shall have a *fire-resistance rating* of not less than 2 hours.
2. Where encased with not less than 2 inches (51 mm) of concrete.
3. Electrical circuit protective systems shall have a *fire-resistance rating* of not less than 2 hours. Electrical circuit protective systems shall be installed in accordance with their listing requirements.

[BE] 1023.2 Construction. Enclosures for *interior exit stairways* and *ramps* shall be constructed as *fire barriers* ~~in accordance with Section 707 of the International Building Code~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the International Building Code,~~ or both. *Interior exit stairway* and *ramp* enclosures shall have a *fire-resistance rating* of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the *interior exit stairways* or *ramps* shall include any *basements*, but not any *mezzanines*. Enclosure for *interior exit stairways* and *ramps* shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours. **Exceptions:**

1. *Interior exit stairways* and *ramps* in Group I-3 occupancies in accordance with the provisions of Section 408.3.8 of the International Building Code.
2. *Interior exit stairways* within an atrium enclosed in accordance with Section 404.6 of the International Building Code.
3. *Interior exit stairways* in accordance with Section 510.2 of the *International Building Code*.

[BE] 1023.3.1 Extension. Where *interior exit stairways* and *ramps* are extended to an *exit discharge* or a *public way* by an *exit passageway*, the *interior exit stairway* and *ramp* shall be separated from the *exit passageway* by ~~a~~ *fire barriers* ~~constructed in accordance with Section 707 of the International Building Code~~ or ~~a~~ *horizontal assemblies* ~~*assembly* constructed in accordance with Section 711 of the International Building Code,~~ or both. The *fire-resistance rating* shall be not less than that required for the *interior exit stairway* and *ramp*. A *fire door* assembly complying with Section 716 of the International Building Code shall be installed in the *fire barrier* to provide a *means of egress* from the *interior exit stairway* and *ramp* to the *exit passageway*. Openings in the *fire barrier* other than the *fire door*

assembly are prohibited. Penetrations of the *fire barrier* are prohibited.

Exceptions:

1. Penetrations of the *fire barrier* in accordance with Section 1023.5 shall be permitted.
2. Separation between an *interior exit stairway* or *ramp* and the *exit passageway* extension shall not be required where there are no openings into the *exit passageway* extension.
3. Separation between an *interior exit stairway* or *ramp* and the *exit passageway* extension shall not be required where the *interior exit stairway* and the *exit passageway* extension are pressurized in accordance with Section 909.20.4 of the International Building Code.

[BE] 1023.12.1 Termination and extension. A *smokeproof enclosure* shall terminate at an *exit discharge* or a *public way*. The *smokeproof enclosure* shall be permitted to be extended by an *exit passageway* in accordance with Section 1023.3. The *exit passageway* shall be without openings other than the *fire door assembly* required by Section 1023.3.1 and those necessary for egress from the *exit passageway*. The *exit passageway* shall be separated from the remainder of the building by not less than 2-hour *fire barriers* ~~constructed in accordance with Section 707 of the International Building Code~~ or *horizontal assemblies* ~~constructed in accordance with Section 711 of the International Building Code,~~ or both.

Exceptions:

1. Openings in the *exit passageway* serving a *smokeproof enclosure* are permitted where the *exit passageway* is protected and pressurized in the same manner as the *smokeproof enclosure*, and openings are protected as required for access from other floors.
2. The *fire barrier* separating the *smokeproof enclosure* from the *exit passageway* is not required, provided that the *exit passageway* is protected and pressurized in the same manner as the *smokeproof enclosure*.
3. A *smokeproof enclosure* shall be permitted to egress through areas on the *level of exit discharge* or vestibules as permitted by Section 1028.

[BE] 1026.2 Separation. The separation between buildings or refuge areas connected by a *horizontal exit* shall be provided by ~~a *fire wall* complying with Section 706 of the International Building Code; or by a *fire barrier* complying with Section 707 of the International Building Code or a *horizontal assembly* complying with Section 711 of the International Building Code, or both.~~ not less than 2-hour fire walls, fire barriers or horizontal assemblies, or a combination thereof. ~~The minimum *fire-resistance rating* of the separation shall be 2 hours.~~ Opening protectives in *horizontal exits* shall also comply with Section 716 of the International Building Code. Duct and air transfer openings in a *fire wall* or *fire barrier* that serves as a *horizontal exit* shall also comply with Section 717 of the International Building Code. The *horizontal exit* separation shall extend vertically through all levels of the building unless floor assemblies have a *fire-resistance rating* of not less than 2 hours and do not have unprotected openings.

Exception: A *fire-resistance rating* is not required at *horizontal exits* between a building area and an above-grade pedestrian walkway constructed in accordance with Section 3104 of the International Building Code, provided that the distance between connected buildings is more than 20 feet (6096 mm).

Horizontal exits constructed as *fire barriers* shall be continuous from *exterior wall* to *exterior wall* so as to divide completely the floor served by the *horizontal exit*.

[BE] 1028.2 Exit discharge. *Exits* shall discharge directly to the exterior of the building. The *exit discharge* shall be at grade or shall provide a direct path of egress travel to grade. The *exit discharge* shall not reenter a building. The combined use of Exceptions 1 and 2 shall not exceed 50 percent of the number and minimum width or required capacity of the required *exits*. **Exceptions:**

1. Not more than 50 percent of the number and minimum width or required capacity of *interior exit stairways* and *ramps* is permitted to egress through areas, including atriums, on the *level of discharge* provided that all of the following conditions are met:

   1.1. Discharge of *interior exit stairways* and *ramps* shall be provided with a free and unobstructed path of travel to an exterior exit door and such *exit* is readily visible and identifiable from the point of termination of the enclosure.

   1.2. The entire area of the *level of exit discharge* is separated from areas below by construction conforming to the *fire-resistance rating* for the enclosure.

   1.3. The egress path from the *interior exit stairway* and *ramp* on the *level of exit discharge* is protected throughout by an *approved automatic sprinkler system*. Portions of the *level of exit discharge* with access to the egress path shall either be equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of *interior exit stairways* or *ramps*.

   1.4. Where a required *interior exit stairway* or *ramp* and an *exit access stairway* or *ramp* serve the same floor level and terminate at the same *level of exit discharge*, the termination of the *exit access stairway* or *ramp* and the exit discharge door of the *interior exit stairway* or *ramp* shall be separated by a distance of not less than 30 feet (9144 mm) or not less than one-fourth the length of the maximum overall diagonal dimension of the building, whichever is less. The distance shall be measured in a straight line between the exit discharge door from the *interior exit stairway* or *ramp* and the last tread of the *exit access stairway* or termination of slope of the *exit access ramp*.

2. Not more than 50 percent of the number and minimum width or required capacity of the *interior exit stairways* and *ramps* is permitted to egress through a vestibule provided that all of the following conditions are met:

   2.1. The entire area of the vestibule is separated from areas below by construction conforming to the *fire-resistance rating* of the *interior exit stairway* or *ramp* enclosure.

   2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).

   2.3. The area is separated from the remainder of the *level of exit discharge* by a *fire partition* ~~constructed in accordance with Section 708 of the International Building Code~~. **Exception:** The maximum transmitted temperature rise is not required.

   2.4. The area is used only for *means of egress* and *exits* directly to the outside.

3. *Horizontal exits* complying with Section 1026 shall not be required to discharge directly to the exterior of the building.

[BE] 1030.1.1.1 Spaces under grandstands and bleachers. Spaces under *grandstands* or *bleachers* shall be separated by <u>not less than 1-hour</u> *fire barriers* ~~complying with Section 707 of the International Building Code~~ and *horizontal assemblies* ~~complying with Section 711 of the International Building Code with not less than 1-hour *fire-resistance-rated* construction~~ <u>, or both .</u>

Exceptions:

1. Ticket booths less than 100 square feet (9 m^2) in area.
2. Toilet rooms.
3. Other accessory use areas 1,000 square feet (93 m^2) or less in area and equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

Reason: This proposal is designed to provide consistency with references to fire-resistance-rated construction requirements. The 2024 IBC makes multiple requirements for fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions. The format of the requirements is not consistent, but more importantly, there is really no need to reference the section regulating these components every time a requirement is made. These terms are all defined terms and each component has a specific section that it must comply with. Where Section 426.1.7 requires a tire buffing room to be separated from the remainder of the building by 1-hour fire barriers, it is understood that the fire barrier must comply with the code. If the fire barrier does not comply with the code, it is not a fire barrier.

For example, the IBC does not state provide “exit doors in accordance with Section 1010” every time an exit door is required. Such language is not necessary and the code does not need to state it, because if the door does not comply then it is not considered an exit door.

Currently, the IBC does not reference the specific sections in the following locations:
404.6, 407.5.4, 408.6.1, 412.4.1, 415.9.1.2, 415.11.1.6, 415.11.7.4, 420.6, 426.1.7, 507.9, 510.2, 510.5, 510.6, 707.3.10, 714.4, 714.5.4, 717.5.1.1, 909.6, 909.6.2, 909.18.6, 910.3.2, 911.1.6, 1026.2, 3007.6.2, 3008.6.2
None of these sections refer back to Chapter 7, but they all seem to work effectively without that reference.

This proposal intends to eliminate the multiple phrases “constructed in accordance with Section 70X” because they are not needed, and are basically redundant. The code proves that they are not needed by the number of references where the section for construction is not included.

Even where a section in Chapter 7 is referenced, a number of references are worded differently. Some of those sections include:

- **402.4.2.2** Anchor building separation. …fire walls complying with Section 706.
- **420.2** Separation walls. …fire partitions in accordance with Section 708
- **422.2** Separation walls. …fire partitions installed in accordance with Section 708
- **716.3.2.1.1** Where 3/4-hour-fire-protection window assemblies permitted. …fire partitions designed in accordance with Section 708
- **1026.2** Separation. …fire wall complying with Section 706; or by a fire barrier complying with Section 707 or a horizontal assembly complying with Section 711, or both.

This code change is editorial and makes no change in code application. This proposal simplifies the code language and provides consistency in the requirements for fire walls, fire barriers, smoke barriers, etc.

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

Justification for no cost impact:

This proposal is long, but it is entirely editorial. There is no change in code application or code requirements.

FS21-24 Part I

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee has concerns with "where required by this code". The committee indicated that the proposal needs to maintain the authority between codes. The committee agreed with some of the proposed text for example, the IBC does not state provide “exit doors in accordance with Section 1010” every time an exit door is required. Such language is not necessary and the code does not need to state it, because if the door does not comply then it is not considered an exit door (Vote: 10-1).

FS21-24 Part I

Individual Consideration Agenda

Comment 1:

IBC: 706.1, 707.1, 709.1, 710.1, 711.1

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

Modify as follows:

2024 International Building Code

Revise as follows:

706.1 General. *Fire walls* ~~required by this code or the *International Fire Code*~~ shall be constructed in accordance with Sections 706.2 through 706.11. The extent and location of such *fire walls* shall provide a complete separation. Where a *fire wall* separates occupancies that are required to be separated by a *fire barrier* wall, the most restrictive requirements of each separation shall apply.

707.1 General. *Fire barriers* ~~required by this code or the *International Fire Code*~~ shall comply with this section.

Revise as follows:

709.1 General. Vertical and horizontal *smoke barriers* ~~required by this code or the *International Fire Code*~~ shall comply with this section.

710.1 General. *Smoke partitions* ~~required by this code or the *International Fire Code*~~ shall comply with this section.

711.1 General. *Horizontal assemblies* ~~required by this code or the *International Fire Code*~~ shall comply with Section 711.2. Nonfire-resistance-rated floor and *roof assemblies* shall comply with Section 711.3.

Reason: This item was Disapproved at CAH 1. FS21-24 Part II was Approved as Modified at CAH 1.

The only negative comment about the proposal was with regard to whether the IFC could require fire barriers, fire walls, etc. Without entering into that argument, this comment has been revised to correlate all of 5 charging sections dealing with each type of fire-rated or smoke-rated assembly so that they do not reference which code the requirement comes from. The issue is if it is a fire barrier, how is it constructed...Section 707 provides those provisions; and Section 706 for fire walls, etc.

The language used in each section matches the original language in Section 709.1 for smoke barriers, "vertical and horizontal smoke barriers shall comply with this section." Very simple; and each section conveys the same message.

Then throughout the code, where the code refers to a fire wall, for example in IBC Section 402.4.2.2, the code user refers back IBC Section 406 which provides the criteria on construction.

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

Justification for no cost impact:

There is no change in code application or code requirements.

Comment (CAH2)# 794

FS23-24

IBC: 706.3

Proposed Change as Submitted

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

2024 International Building Code

Revise as follows:

706.3 Materials. *Fire walls* shall be of any *approved* noncombustible materials. **Exception:** *Buildings* of Type III or V construction.

Reason: Type III construction allows use of untreated combustible materials in all locations except in a fire wall or an exterior wall. The code already allows 2 hour exterior wall to be constructed of fire-retardant-treated wood in lieu of noncombustible materials in Type III construction. It makes sense to extend that to a fire wall as the performance would be no different. This code change eliminates any potential conflict with Section 602.3.

Furthermore, building a fire wall using a completely different construction method such as concrete or masonry not employed in the remainder of the building requires a specialty contractor. This may result in scheduling and coordination conflicts and delays that necessarily result in higher costs.

Note that the fire resistances listed in Table 706.4 remain unchanged.

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

Estimated Immediate Cost Impact:

$0.00

The addition of fire-retardant-treated wood as an option to this section of the code may decrease the cost of construction.

Estimated Immediate Cost Impact Justification (methodology and variables):

Fire-retardant-treated wood is generally less expensive than noncombustible materials. Because FRTW may be used as an alternate to these materials, the cost may be less.

FS23-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 11-0).

FS23-24

Individual Consideration Agenda

Comment 1:

IBC: 706.3

Proponents: David Bueche, Hoover Treated Wood Products, Hoover Treated Wood Products (dbueche@frtw.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

706.3 Materials. *Fire walls* shall be of any *approved* noncombustible materials. ~~**Exception**~~ **Exceptions:**

1. *Buildings* of ~~Type III or~~ V construction.
2. *Fire-retardant-treated wood* complying with section 2303.2 shall be permitted in buildings of Type III construction.

Reason: This clarifies that the intent is to allow fire-retardant-treated wood to be used in fire walls of Type III construction. This type of construction allows use of untreated combustible materials in all locations except in a fire wall or an exterior wall. The code already allows 2 hour exterior walls to be built of fire-retardant-treated wood in lieu of noncombustible materials in Type III construction. It makes sense to extend that to a fire wall as the performance would be no different. This code change eliminates any potential conflict with Section 602.3.

Furthermore, building a fire wall using a completely different construction method such as concrete or masonry not employed in the remainder of the building requires a specialty contractor. This may result in scheduling and coordination conflicts and delays that necessarily result in higher costs.

Note that the fire resistances listed in Table 706.4 remain unchanged.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

$0.00

The addition of fire-retardant-treated wood as an option to this section of the code may decrease the cost of construction.

Estimated Immediate Cost Impact Justification (methodology and variables):

Fire-retardant-treated wood is generally less expensive than noncombustible materials. Because FRTW may be used as an alternate to these materials, the cost may be less.

Comment (CAH2)# 618

FS24-24

IBC: 706.5

Proposed Change as Submitted

Proponents: Tim Pate, City and County of Broomfield, Colorado Chapter Code Development Committee (tpate@broomfield.org)

2024 International Building Code

Revise as follows:

706.5 Horizontal continuity. *Fire walls* shall be continuous from *exterior wall* to *exterior wall* and shall extend not less than 18 inches (457 mm) beyond the exterior surface of *exterior walls*. **Exceptions:**

1. *Fire walls* shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided that the *exterior wall* has a *fire-resistance rating* of not less than 1 hour for a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than $^{3}/_{4}$ hour.
2. *Fire walls* shall be permitted to terminate at the interior surface of *fire-retardant-treated-wood* or noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided that the sheathing, siding or other exterior noncombustible finish extends a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.
3. *Fire walls* shall be permitted to terminate at the interior surface of *fire-retardant-treated-wood* or noncombustible exterior sheathing where the *building* on each side of the *fire wall* is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Reason: This proposal is to add fire retardant treated wood in addition to the noncombustible sheathing in 706.5 exception 2 and 3. This would be equivalent to 706.6 #4 for vertical continuity which requires fire-retardant-treated wood roof sheathing for roof sheathing or installing the ⅝" type X drywall to underside of regular roof sheathing.

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

Justification for no cost impact:

This proposal will not increase or decrease cost of construction since it is adding another type of product to meet the code

FS24-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disagreed with the proposed text to exceptions 2 and 3 in Section 706.5 for horizontal continuity. The committee has an issue with adding "fire-retardant-treated-wood" before the noncombustible exterior sheathing (Vote: 10-1).

FS24-24

Individual Consideration Agenda

Comment 1:

IBC: 706.5

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

Modify as follows:

2024 International Building Code

706.5 Horizontal continuity. *Fire walls* shall be continuous from *exterior wall* to *exterior wall* and shall extend not less than 18 inches (457 mm) beyond the exterior surface of *exterior walls*. **Exceptions:**

1. *Fire walls* shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided that the *exterior wall* has a *fire-resistance rating* of not less than 1 hour for a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than $^{3}/_{4}$ hour.
2. *Fire walls* shall be permitted to terminate at the interior surface of ~~*fire-retardant-treated wood* or~~ noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided that the sheathing, siding or other exterior noncombustible finish extends a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.
3. *Fire walls* shall be permitted to terminate at the interior surface of ~~*fire-retardant-treated wood* or~~ noncombustible exterior sheathing where the *building* on each side of the *fire wall* is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.
4. In buildings of Type III, IV-HT or V construction, *fire walls* shall be permitted to terminate at the interior surface of *fire-retardant-treated-wood* exterior sheathing provided that *fire-retardant-treated wood* exterior sheathing extends a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.
5. In buildings of Type III, IV-HT or V construction, *fire walls* shall be permitted to terminate at the interior surface of *fire-retardant-treated-wood* exterior sheathing where the *building* on each side of the *fire wall* is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Reason: The testimony at Committee Action Hearing #1 raised concerns with fire-retardant-treated wood (FRTW) exterior sheathing being used in any type of construction as a replacement for noncombustible exterior sheathing. Direction was offered to model this code change after language used in Section 706.6, Exception #4, which limited the use of FRTW roof sheathing to buildings of Type III, IV and V construction when terminating a fire wall vertically. This proposed comment on FS24-24 mirrors that option to provide termination of a fire wall horizontally at FRTW sheathing only in Types III, IV-HT and V construction. Additional testimony mentioned that we would be weakening a building by permitting FRTW exterior sheathing on many buildings, but by limiting the types of construction, only buildings which permit FRTW exterior sheathing are included, so there would be no weakening of building elements in these instances.

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

Justification for no cost impact:

The original proposal was also considered editorial because it is just adding an additional method for code compliance.

Comment (CAH2)# 38

FS26-24

IBC: 707.3, 707.3.12 (New)

Proposed Change as Submitted

Proponents: Micah Chappell, Seattle Department of Construction and Inspections, Seattle Department of Construction and Inspections (micah.chappell@seattle.gov); Ardel Jala, Seattle Dept of Construction & Inspections, Seattle Dept of Construction & Inspections (ardel.jala@seattle.gov)

2024 International Building Code

707.3 Fire-resistance rating. The *fire-resistance rating* of *fire barriers* shall comply with this section.

Add new text as follows:

707.3.12 Energy Storage Systems. The *fire barrier* separating *energy storage systems* from other spaces in the building shall have a minimum 2-hour *fire-resistance rating.*

Reason: The 2024 International Fire Code (IFC) requires fire barriers provide a 2-hour fire resistance rating when separating areas containing energy storage systems (ESS), from other areas of the building, and has a pointer to Section 707 of the International Building Code (IBC). This proposed additional language to Section 707.3 of the IBC provides the minimum fire resistance rating required for those fire barriers aligning the IBC with IFC.

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

Justification for no cost impact:

The IFC already required the rated separation and this code change proposal only aligns the IBC with the existing requirement.

FS26-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee agreed that this is a needed clarification. However, the committee suggested to the proponent to work on a scoping statement between IBC and IFC. The committee also suggested providing limitations of implementation to the added text to avoid unintended consequences (Vote: 9-1).

FS26-24

Individual Consideration Agenda

Comment 1:

IBC: 707.3.12

Proponents: Micah Chappell, Seattle Department of Construction and Inspections, Seattle Department of Construction and Inspections

(micah.chappell@seattle.gov) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

707.3.12 Energy Storage Systems. Where required by the *International Fire Code* ~~T~~the *fire barrier* separating *energy storage systems* from other spaces in the building shall have a minimum 2-hour *fire-resistance rating*.

Reason: We request your approval of this modification that was requested by the Committee.

This modification mimics the language the Committee approved for FS34-24-Chappell-MP1 that provides a reference to the Fire Code were the requirement originates for energy storage systems.

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

Justification for no cost impact:

This provides a reference to the fire code, no cost impact to the original proposal.

Comment (CAH2)# 623

FS31-24

IBC: 709.9 (New)

Proposed Change as Submitted

Proponents: Jeff O'Neil, Chair, Committee on Healthcare (ahc@iccsafe.org); William Koffel, Koffel Associates, Inc., California Solar and Storage Association (CALSSA) (wkoffel@koffel.com)

2024 International Building Code

Add new text as follows:

709.9 Separating smoke compartments. Where the horizontal assembly is required to be a smoke barrier, the assembly shall comply with Section 909.

Reason: The code does not completely address where the floors (horizontal assemblies) are required to also be designed as smoke barriers. Section 711.2.4.4 sends you to Section 709 for smoke barriers that are horizontal assemblies. Smoke compartments are required in ambulatory care, Group I-1 Condition 2, Group I-2 and Group I-3. Pressurized stairways also use horizontal smoke barriers. As indicated in Section 422.3, smoke barriers shall be provided on any story containing an ambulatory care facility which is greater than 10,000 sq. ft. in area. The creation of smoke compartments is required to allow a protect-in-place environment. These compartments allow staff a safer environment to stabilize the care recipients before evacuation and protection for fire personnel who may have to evacuate both care recipients and staff. The requirement for a smoke barrier is based solely on a story-by-story basis without consideration of fire-resistance ratings for the floor assemblies. As such, a smoke barrier is not required for the floor assemblies.

Since the primary performance of smoke barriers is to achieve protection on the fire floor, the supporting construction is not required to provide the same degree of fire resistance for buildings of Types IIB, IIIB and VB construction as specified in Section 709.4. These three construction types are identified since the floor construction is not otherwise required to have a fire-resistance rating and it is not considered essential to require fire-resistance-rated floor construction due to the floor supporting a smoke barrier. As such, since the building in question is of Type IIB construction, the supporting construction for the smoke barrier is not required to have a fire-resistance rating.

This proposal is submitted by the ICC Committee for Healthcare (CHC).
The Committee on Healthcare (CHC) was established by the ICC Board of Directors in 2011 to pursue opportunities to study and develop effective and efficient provisions for Hospital, Nursing Homes, Assisted Living and Ambulatory Care Facilities. This committee was formed in cooperation with the American Society for Healthcare Engineering (ASHE). In July of 2017, the ICC Board made CHC a standing committee. In 2023 the CHC has held several virtual meetings open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the CHC website at CHC webpage.

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

Justification for no cost impact:

This is a clarification with no change to construction requirements. Please refer to the reason statement.

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee deemed the proposed code change is needed to clarify the requirements for separating smoke compartments. The committee agreed that the pointer to section 909 is needed where the horizontal assembly is required to be a smoke barrier (Vote: 9-2).

FS31-24

Individual Consideration Agenda

Comment 1:

Proponents: Ajay Prasad, Jensen Hughes, Self (aprasad@jensenhughes.com) requests Disapproved

Reason: This code change is not necessary. The intent of the change was stated as addressing where floors (horizontal assemblies) are required to be smoke barriers. The code change would require horizontal assemblies as smoke barriers to comply with Section 909 for smoke control systems. Section 909 broadly covers mechanical and passive smoke control systems.

Section 709 covers both vertical and horizontal smoke barriers but the scoping requirement for smoke barriers originates in other sections. Section 407.5 only requires vertical smoke barriers (i.e., walls) to comply with 709.Section 407.5.5 requires horizontal assemblies supporting smoke barriers to resist the movement of smoke but this section does not reference Section 709. Since smoke compartment in institutional occupancies is primarily passive, the current provisions in Section 709 are sufficient to limit the movement of smoke without the need to reference Section 909.

Section 709.4.1 requires continuity of smoke barrier walls.Section 709.5 requires openings in smoke barriers to be protected per Section 716 but has key exceptions for cross-corridor doors in Groups I-1, I-2 and ambulatory care facilities

Sections 709.6, 709.7, and 709.8 address with penetrations, joints, and duct/air transfer openings respectively. Specifically, limiting smoke spread through horizontal smoke barriers is already covered by references in Section 709. Section 709.6 references 714. 714.5.4 for penetrations of smoke barriers requires a L rating. Section 709.7 references 715. 715.9 requires L ratings for joints in smoke barriers. Section 709.8 references 717.5.5 which requires smoke dampers in duct/ATO penetrations of smoke barriers.

A code change to 407.5.5 to reference Section 709 is a more straightforward solution that should be considered by the submitters.

Proposed §709.10 would include compliance with §909.5 for smoke barrier construction which states, “Smoke barriers required for passive smoke control and a smoke control system using the pressurization methods shall comply with Section 709.” This is a circular reference. Furthermore, it could be read as only applying to both because of the “and: conjunction. Section 909.5 requires calculation of the maximum allowable leakage areas. Section 909.5.2 requires verification of passive smoke control through methods such as door fan testing or other methods approved by the code official. The forms of smoke protection specified in Section 709 for horizontal assemblies would be covered by special inspections.

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

Comment (CAH2)# 117

FS35-24

IBC: 711.2.4, 711.2.4.7 (New), 711.3, 711.3.3 (New)

Proposed Change as Submitted

Proponents: William Koffel, Koffel Associates, Inc., Firestop Contractors International Association (FCIA) (wkoffel@koffel.com)

2024 International Building Code

Revise as follows:

711.2.4 Fire-resistance rating. The *fire-resistance rating* of *horizontal assemblies* shall comply with Sections 711.2.4.1 through ~~711.2.4.6~~ 711.2.4.7 but shall be not less than that required by the *building* type of construction.

Add new text as follows:

711.2.4.7 Occupiable roofs. Occupiable roofs shall have penetrations protected in accordance with Section 714 and joints and voids protected in accordance with Section 715. Skylights shall not be located within the occupied area of occupiable roofs.

711.3 Nonfire-resistance-rated floor and roof assemblies. Nonfire-resistance-rated floor, floor/ceiling, roof and roof/ceiling assemblies shall comply with Sections 711.3.1 and ~~711.3.2~~ 711.3.3.

Add new text as follows:

711.3.3 Occupiable roofs. Occupiable roofs shall have penetrations, joints and voids protected with materials or systems that prevent the spread of fire through the roof assembly. Skylights shall not be located within the occupied area of occupiable roofs.

Reason: When a roof becomes occupied or occupiable, the safety of the occupants on the roof becomes the same as if they were standing on the floor below. Without a fire-resistance rating and protected penetrations, joints and voids along with restrictions for skylights in the occupied roof area, the occupants are exposed to a fire and life safety risk. When a roof becomes occupied or occupiable, the safety of the occupants on the roof becomes the same as if they were standing on the floor below. Without a fire-resistance rating and protected penetrations, joints and voids, along with regulations for skylights in the occupied roof area, the occupants are exposed to a fire and life safety risk.

The proposal builds on the concept of occupiable roofs, added to the 2024 IBC.

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

Estimated Immediate Cost Impact:

The estimated cost is $35 - $50 per installed firestop system and $35 - $50 per lineal ft. of installed joint sytems.

Estimated Immediate Cost Impact Justification (methodology and variables):

The estimate includes materials and labor costs for any type of penetration system and fire-resistant joint system through a roof assembly. The total cost for any specific building will depend upon the number of penetrations and joint systems.

FS35-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee concluded that the proposal is unnecessary since the code already addresses this issue (Vote: 6-5).

FS35-24

Individual Consideration Agenda

Comment 1:

IBC: 711.2.4, 711.2.4.7, 711.3, 711.3.3

Proponents: Bill McHugh, CM Services, Firestop Contractors International Association (bill@mc-hugh.us); William Koffel, Koffel Associates, Inc., Firestop Contractors International Association (FCIA) (wkoffel@koffel.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

711.2.4 Fire-resistance rating. The *fire-resistance rating* of *horizontal assemblies* shall comply with Sections 711.2.4.1 through 711.2.4.7 but shall be not less than that required by the *building* type of construction.

711.2.4.7 Occupiable roofs. Occupiable roofs shall have penetrations protected in accordance with Section 714 and joints ~~joints and voids~~ protected in accordance with Section 715. Skylights shall not be located within the occupied area of occupiable roofs.

711.3 Nonfire-resistance-rated floor and roof assemblies. Nonfire-resistance-rated floor, floor/ceiling, roof and roof/ceiling assemblies shall comply with Sections 711.3.1 and 711.3.3.

711.3.3 Occupiable roofs. Occupiable roofs shall have penetrations and joints~~, joints and voids~~ protected with materials or systems that prevent the spread of fire through the roof assembly. Skylights shall not be located within the occupied area of occupiable roofs.

Reason: Occupiable rooftops change the roof from a weather resistant environment to both a weather resistant surface and life safety protection system. Fire from below should not cause rooftop occupants more risk than if they were standing on the floor below the roof. Even if a one story roof, people on the rooftop need protection from fire poking through penetrations, joints, and skylights - a huge opening with both fire and safety risks. This concept of occupiable rooftop regulation is relatively new to the code having been defined last cycle in the '24 IBC.

In Orlando, there were requests to clarify where protection is to be required. While the title of section 715 is Joints and Voids, there is no definition for voids in the IBC's Chapter 2, which may have caused confusion. Therefore, the word 'void' has been removed from the proposal.

At the Committee Action Hearings in Orlando, there was testimony by the Extruded Polystyrene Insulation Association (XPSA) others, that seemed misleading. When a roof assembly becomes fire-resistance-rated, it does not mean firestopping is now required in joints or voids between pieces or sections of the overburden walking surface.

The reason is that the fire-resistance test is conducted on the horizontal assembly from the bottom side for a specified time period. The horizontal assembly consists of the roof deck, the roof covering including the roof insulation, a roof membrane, and some protection beneath the roof deck. Joints (and voids) and penetrations, are protected at that fire-resistance-rated assembly – below the insulation and overburden. There is no need to protect joints between adjacent pieces of sections of the overburden walking surface.

Please reconsider this proposal to approved as modified.

Cost Impact: Increase

Estimated Immediate Cost Impact:

The estimated cost is $35 - $50 per installed firestop system and $35 - $50 per lineal ft. of installed joint systems.

Estimated Immediate Cost Impact Justification (methodology and variables):

The estimate includes materials and labor costs for any type of penetration system and fire-resistant joint system through a roof assembly. The total cost for any specific building will depend upon the number of penetrations and joint systems.

Comment (CAH2)# 452

FS36-24

IBC: 712.1.9

Proposed Change as Submitted

Proponents: Ronald Geren, RLGA Technical Services, LLC, Self (ron@specsandcodes.com)

2024 International Building Code

Revise as follows:

712.1.9 Two-story openings. In other than Groups I-2 and I-3, a vertical opening that is not used as one of the applications specified in this section shall be permitted if the opening complies with all of the following items:

1. Does not connect more than two *stories.*
2. Does not penetrate a *horizontal assembly* that separates *fire areas* or *smoke barriers* that separate *smoke compartments*.
3. Is not concealed within the construction of a wall or a floor/ceiling assembly.
4. Is ~~not open to~~ separated from a *corridor* in Group I and R occupancies by a fire-resistance-rated assembly tested under ASTM E119 or UL 263, or by *smoke partitions* complying with Section 710. In addition, doors protecting openings in *smoke partitions* shall comply with Sections 710.5.2.2 and 710.5.2.3. Doors in other fire-resistance-rated assemblies shall comply with Section 716.2.2.
5. Is ~~not open to~~ separated from a *corridor* on nonsprinklered floors by a fire-resistance-rated assembly tested under ASTM E119 or UL 263, or by *smoke partitions* complying with Section 710. In addition, doors protecting openings in *smoke partitions* shall comply with Sections 710.5.2.2 and 710.5.2.3. Doors in other fire-resistance-rated assemblies shall comply with Section 716.2.2 .
6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required *shaft enclosures.*

Reason: The words "not open to" in items #4 and #5 are not defined or described. "Not open to" could be interpreted to mean not atmospherically connected and separated by some physical barrier without openings. Or "not open to" could mean that openings are allowed, but there are means of controlling the passage of smoke between the two-story opening and the adjacent corridors.

This proposal eliminates the ambiguity by replacing the words "not open to" with specific provisions that define when a two-story opening is "not open to" a corridor.

Since the intent is to eliminate the passage of smoke from a two-story opening into a corridor under the stated circumstances, providing a means of controlling the smoke is the only option, and the provisions for fire-resistance-rated assemblies and smoke partitions offer that capability.

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

Estimated Immediate Cost Impact:

For jurisdictions requiring some form of physical separation with no openings (i.e., doors and windows) between the two-story opening and a corridor, this change would allow the designer more flexibility, which may or may not reduce cost. If jurisdictions interpret this section to mean that corridors can open into two-story spaces as long as a door with a closer is provided, then this change would add some cost due to the minimal protection required by a smoke partition between the corridor and the two-story space that requires smoke and draft control for any doors. If the separation is already provided by a fire-resistance-rated assembly through some other code requirement, there would be no additional cost since openings would be required to be protected.

Estimated Immediate Cost Impact Justification (methodology and variables):

If minimal protection is required, the cost would be $65 to $100 per opening for "S" labels on the doors and frames and smoke seals

around the door perimeter. The majority of the cost will be for the "S" labels (about $40 for the door and frame) and $25 for the seals for a standard 3' by 7' door. Double doors will be at the higher end for the additional label and extra length of perimeter to seal.

FS36-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed language still needs more work. The proposed text does not specify fire-resistance-rating. The committee also recommended looking into Section 509.4.2 (Vote: 11-0).

FS36-24

Individual Consideration Agenda

Comment 1:

IBC: 712.1.9

Proponents: Ronald Geren, RLGA Technical Services, LLC, Self (ron@specsandcodes.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

712.1.9 Two-story openings. In other than Groups I-2 and I-3, a vertical opening that is not used as one of the applications specified in this section shall be permitted if the opening complies with all of the following items:

1. Does not connect more than two *stories.*
2. Does not penetrate a *horizontal assembly* that separates *fire areas* or *smoke barriers* that separate *smoke compartments*.
3. Is not concealed within the construction of a wall or a floor/ceiling assembly.
4. Is separated from a *corridor* in Group I and R occupancies ~~by a fire-resistance-rated assembly tested under ASTM E119 or UL 263, or~~ by *smoke partitions* ~~complying with Section 710. In addition, doors~~ Doors protecting openings in *smoke partitions* shall comply with Sections 710.5.2.2 and 710.5.2.3. ~~Doors in other fire-resistance-rated assemblies shall comply with Section 716.2.2.~~
5. Is separated from a *corridor* on nonsprinklered floors ~~by a fire-resistance-rated assembly tested under ASTM E119 or UL 263, or~~ by *smoke partitions* ~~complying with Section 710. In addition, doors~~ Doors protecting openings in *smoke partitions* shall comply with Sections 710.5.2.2 and 710.5.2.3. ~~Doors in other fire-resistance-rated assemblies shall comply with Section 716.2.2.~~
6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required *shaft enclosures.*

Reason: The premise of the original proposal's reason statement is still valid. However, in response to opposition and committee comments, the confusing language referencing "fire-resistance-rated assemblies" and "other fire-resistance-rated assemblies" has been deleted for simplicity. Therefore, only the basic requirement of providing a smoke partition is stated.

Thus, if a wall separating the two-story opening from other building areas is required to have an assembly with more restrictive requirements, Section 702.1 would come into play. For example, suppose the wall separating a corridor from a two-story opening in a Group R occupancy is required to be a fire barrier for occupancy separation. In that case, the wall must conform to the more restrictive requirements of a fire barrier.

Additionally, references to Section 710 were deleted as superfluous since the assemblies mentioned in item #2 do not include references to their respective code sections.

Cost Impact: Increase

Estimated Immediate Cost Impact:

The immediate cost impact remains as stated in the original proposal.

Estimated Immediate Cost Impact Justification (methodology and variables):

The justification remains as stated in the original proposal.

Comment (CAH2)# 767

FS41-24

IBC: 714.2 (New), 715.2 (New)

Proposed Change as Submitted

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

2024 International Building Code

Add new text as follows:

714.2 System variations. Where variations between the installed system and the tested through- or membrane-penetration firestop system exist, sufficient documentation shall be provided to the building official to show that the required ratings are not reduced.

715.2 System variations. Where variations between the installed system and the tested fire-resistant joint system, perimeter fire containment system or continuity head-of wall system exist, sufficient documentation shall be provided to the building official to show that the required ratings are not reduced.

Reason: Despite the fact there are over 10,000 individual firestop systems, fire-resistant joint systems, perimeter fire containment systems and continuity head-of-wall systems, each with multiple construction variations tested as required by the IBC, field conditions frequently occur for which there are no tested system available. These two new sections are intended to address how these unique installations need to be addressed between the design professional, the contractor and the code official. The language proposed emulates the language contained in existing Section 703.2.1.4 other than the fact it addresses all variations and not just supplemental features. For example, it would cover situations where a required component of a tested assembly is not installed, or where some feature not described is installed.

The sufficient documentation required is normally provided in the form of an equivalent firestop system obtained from some knowledgeable party. This process is a necessary and well-established program used on a daily basis in the firestopping industry when not tested systems are available. Industry practice has been to use the equivalent firestop system process only when a tested system is not available.

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

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

Estimated Immediate Cost Impact:

$0.00

Estimated Immediate Cost Impact Justification (methodology and variables):

Alternative means and methods submissions are costly to prepare. However, it has been common practice for AHJ's to accept either a system variation (e.g. engineering judgment) provided by the manufacturer, or a system variation stamped by a professional engineer to cover the installation. Manufacturers provide system variations at no cost. Even where an AHJ requires an Engineer's seal, this is still less costly than an alternative means and methods submission.

Using system variations as proposed will eliminate the need for a costly alternative means and methods submittal. Manufacturers provide system variations (e.g. engineering judgments) at no cost. If an AHJ requires an Engineer's seal, the cost can range is from $1000 to $2000 depending on the area of the country.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee indicated that the proposed sections are needed. However, the committee suggested improving the proposed text. The committee wanted to see more clarification to the text, for example: "sufficient documentation", and "an installed system". The committee recommended adding "listed" systems (Vote: 7-4).

FS41-24

Individual Consideration Agenda

Comment 1:

IBC: 714.2, 715.2

Proponents: Steven Orlowski, Sundowne Building Code Consultants, LLC, Self (sorlowski@sbcc.codes); Robert Marshall, FCAC, FCAC (fcac@iccsafe.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

714.2 System variations. Where a *listed* ~~variations between the installed system and the tested~~ through- or membrane-penetration firestop system cannot be installed in compliance with the listing, the code officials is authorized to accept modifications where ~~exist, sufficient~~ documentation ~~shall be~~ is provided to the ~~building~~code official demonstrating that the firestop system will perform as intended. ~~to show that the required ratings are not reduced.~~

715.2 System variations. Where a *listed* ~~variations between the installed system and the tested~~ fire-resistant joint system, perimeter fire containment system or continuity head-of wall system cannot be installed in compliance with the listing, the code official is authorized to accept modifications where ~~exist, sufficient~~ documentation ~~shall be~~ is provided to the ~~building~~ code official demonstrating that the system will perform as intended. ~~to show that the required ratings are not reduced.~~

Reason:
During Committee Action Hearing No. 1, the committee indicated the proposed new sections are needed and offered suggestions for improvement. This comment addresses the committee's suggestions as noted;

1. Removed the word "installed system" to eliminate the confusion on if the system is already installed.
2. Replaced the word "tested" with "listed" to clearly show the variation is in the listed system.
3. Made clear that supporting documentation acceptable to the code official shall be provided which allows the code official to approve the source of the documentation and the necessary information within the documentation.

Despite the fact there are over 10,000 individual firestop systems, fire-resistant joint systems, perimeter fire containment systems and continuity head-of-wall systems, each with multiple construction variations tested as required by the IBC, field conditions frequently occur for which there are no tested system available. These two new sections are intended to address how these unique installations need to be addressed between the design professional, the contractor and the code official. The language proposed emulates the language contained in existing Section 703.2.1.4 other than the fact it addresses all variations and not just supplemental features. For example, it would cover situations where a required component of a tested assembly is not installed, or where some feature not described is

installed. The sufficient documentation required is normally provided in the form of an equivalent firestop system obtained from someknowledgeable party. This process is a necessary and well-established program used on a daily basis in the firestopping industry when not tested systems are available. Industry practice has been to use the equivalent firestop system process only when a tested system is not available.

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

Cost Impact: Decrease

Estimated Immediate Cost Impact:

$0.00

Estimated Immediate Cost Impact Justification (methodology and variables):

Alternative means and methods submissions are costly to prepare. However, it has been common practice for AHJ’s to accept either a system variation (e.g. engineering judgment) provided by the manufacturer, or a system variation stamped by a professional engineer to cover the installation. Manufacturers provide system variations at no cost. Even where an AHJ requires an Engineer's seal, this is still less costly than an alternative means and methods submission.

Using system variations as proposed will eliminate the need for a costly alternative means and methods submittal. Manufacturers provide system variations (e.g. engineering judgments) at no cost. If an AHJ requires an Engineer's seal, the cost can range is from $1000 to $2000 depending on the area of the country.

Comment (CAH2)# 349

FS42-24

IBC: SECTION 202 (New), 714.2, 714.2.1 (New), 715.2, 715.2.3 (New)

Proposed Change as Submitted

Proponents: William Koffel, Koffel Associates, Inc., Firestop Contractors International Association (FCIA) (wkoffel@koffel.com)

2024 International Building Code

Add new definition as follows:

FIRESTOP IDENTIFICATION DEVICE. A label, placard, or device of any type that identifies the installed firestop system.

714.2 Installation. A *listed penetration firestop* system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria.

Add new text as follows:

714.2.1 Firestop identification devices. Penetration firestop systems shall be permanently identified with a device, label or similar treatment. The device shall be handwritten with permanent ink, or pre-printed, legible tag or label, or format readable by an electronic device and readable from a distance of 24 in. (610 mm) at a 45-degree angle. The device shall at a minimum have the following information:

1. Listing system number or engineering judgement number.
2. Date of Installation
3. Installing company name, contact information.
4. "Warning, Penetration Firestop System - Do Not Remove or Tamper.

Adhesive or mechanically attached Identification devices shall be located within 6 in. (150 mm) below or beside the penetration firestop system edge, on the bottom of a horizontal assembly, or on both sides of a vertical barrier. For multiple penetrations of the same listing number arranged within 6 in. (150 mm) of each other, the device shall be located centered under or within 6 in. (150 mm) to either side of the grouping. Hanging tags shall be attached to the penetrating item with permanent wire, string or plastic tie, within 6 in. (150 mm) of the assembly.

Revise as follows:

715.2 Installation. Systems or materials protecting *joints* and voids shall be installed in accordance with Sections 715.2.1 and ~~715.2.2~~ 715.2.3.

Add new text as follows:

715.2.3 Firestop identification devices. Joint and void protection shall be permanently identified with a device, label or similar treatment. The device shall be handwritten with permanent ink, or pre-printed, legible tag or label, or format readable by an electronic device readable from a distance of 24 in. (610 mm) at a 45-degree angle, both sides of the fire barrier, smoke barrier or fire wall. The device shall at a minimum have the following information:

1. Listing system number or engineering judgement number.
2. Date of Installation.
3. Installing company name, contact information.
4. "Warning, Joint and Void Protection System - Do Not Remove or Tamper.

Adhesive or mechanically attached Identification devices shall be located within 6 in. (150 mm), of the joint and void system edge.

Reason: Installing penetration firestop systems looks as easy as applying red caulk into the annular space of a penetration or gap, breach created for a joint or void. Firestop systems are very complex, detailed listed systems that take understanding of the tolerances so they work when called upon by fire. Firestop systems are not easy to install once the listings are introduced to the installation – which is the only way to install and inspect firestopping.

The proposal adds a requirement to identify the system used to maintain fire-resistance of the assembly where a breach was made to pass penetrating item(s). This is a way for the firestop installation contractor to make others aware of what was installed. Knowing the system or engineering judgement/equivalent fire-resistance-rated assembly installed speeds up the special inspection agency inspector's work by eliminating the need to look up systems during the inspections. It also helps the building owner and manager compare the listings to the jobsite installations during the annual visual inspections required for the life cycle of the building.

This firestop system identification system allows all parties to understand what listing has been used, which then identifies the manufacturer's materials used in the system. The listing identifies the penetrating item(s), annular space size limitations, firestop material manufacturer, and assemblies to protect.

The assemblage of materials designed to keep fire from spreading outside a fire resistance rated assembly needs to be properly installed, inspected and maintained. The identification device makes the firestop special inspection verification process much more cost efficient and effective.

Labeling items at fire-barriers is consistent with other fire-resistance-rated assemblies. In Section 703.5, Marking and Identification, the walls are identified. Fire doors, fire dampers, and fire rated glazing are identified as well. The firestop labelling would be consistent with the requirements for the fire-resistance-rated wall assembly. This identification device provides confidence that the appropriate level of protection is provided, and the fire-resistance-rated design maintained easily.

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

Estimated Immediate Cost Impact:

The identification device cost per penetration firestop system is approximately $0.10 US per penetration.

Estimated Immediate Cost Impact Justification (methodology and variables):

The cost increase is limited because the worker is already at the assembly, climbing a ladder or on a lift, with the materials, installing the system. All that needs to happen is adding the identification device, usually a label or tag. However, the device lowers the cost of inspection during construction and annual visual inspection because it saves the inspector time sorting through listings to find the right listing which was used.

FS42-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee concluded that the proposal needs more work to address different issues. For example, the committee had an issue with "device, label or similar treatment". The committee also recommended establishing limits on joints. The committee thought that an "electronic device readable from a distance of 24 in. (610 mm) at a 45-degree angle" is not needed" (Vote: 11-0).

Individual Consideration Agenda

Comment 1:

IBC: 714.2, 714.2.1 (New), 715.2, 715.2.3 (New), ASTM Chapter 35 (New)

Proponents: William Koffel, Koffel Associates, Inc., Firestop Contractors International Association (FCIA) (wkoffel@koffel.com) requests As Modified by Committee (AMC2)

Replace as follows:

2024 International Building Code

714.2 Installation. A *listed penetration firestop* system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria.

Add new text as follows:

714.2.1 Identification Device. Penetration firestop systems shall be permanently identified with a device, label, or similar treatment installed in accordance with ASTM WK 70416.

715.2 Installation. Systems or materials protecting *joints* and voids shall be installed in accordance with Sections 715.2.1 ~~and~~ through ~~715.2.2~~ 715.2.3.

Add new text as follows:

715.2.3 Identification Device. Fire-resistant joint systems shall be permanently identified with a device, label or similar treatment installed in accordance with ASTM WK 70416.

Add new standard(s) as follows:

ASTM

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

WK70416	New Practice for On-Site Identification of Penetration Firestop Systems and Fire-Resistive Joint Systems and Perimeter Fire Barrier

Reason: The Committee voted for Disapproval based upon some of the proposed language. The Committee also voted for Disapproval of FS40-24 because the standard was not ready. Since FS42 addressed both firestop systems and fire-resistant joint systems, the approach proposed in FS40-24 (using a reference standard) is the language proposed in this Public Comment for both penetration firestop systems and fire-resistant joint systems. We expect that the ASTM standard will be completed by the Public Comment hearing. Assuming that to be the case, a Floor Modification will be submitted to revise the current reference to the correct ASTM Standard number. The ASTM Work Item as submitted, makes inspections easier, clears up inspection issues efficiently and effectively. Knowing the system or Engineering Judgement Number to properly identifying the system. Without the system number, code officials, special inspectors, and building owners don't know which system was used and wind up hunting multiple directories to identify the system description.

Identifying the system installed makes the enforcement process and special inspections easier and more efficient. In addition, the information provided is useful to building owners in the performance of the required visual inspections of penetration firestop systems and fire-resistant joint systems.

The identification devices allow all parties to understanding what listed system was used, which then identifies the manufacturer's

materials used in the system.

Cost Impact: Increase

Estimated Immediate Cost Impact:

The Public Comment, if approved, will increase the cost of construction by about $0.10 per device.

Estimated Immediate Cost Impact Justification (methodology and variables):

The number of devices varies based upon the type of building and the occupancy of the building. It should be noted that the current Working Document allows the grouping of joint systems, resulting in a single device for the group of joints where the same system is used. While the cost of construction could increase, the ability of the code official or special inspectors to enforce the code should decease by making the process for efficient.

Comment (CAH2)# 706

FS47-24

IBC: 714.5, 714.5.1

Proposed Change as Submitted

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

2024 International Building Code

714.5 Horizontal assemblies. Penetrations of a *fire-resistance-rated* floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly not required to be enclosed in a *shaft* by Section 712.1 shall be protected in accordance with Sections 714.5.1 through 714.5.4.

Revise as follows:

714.5.1 Through penetrations. *Through penetrations* of *horizontal assemblies* shall comply with Section 714.5.1.1 or 714.5.1.2. **Exceptions:**

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or *masonry* items through a single fire-resistance-rated floor assembly where the *annular space* is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided that the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 mm^2) in any 100 square feet (9.3 m^2) of floor area.
2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided that the concrete, grout or *mortar* is installed the full thickness of the floor or the thickness required to maintain the *fire-resistance rating*. The penetrating items shall not be limited to the penetration of a single concrete floor, provided that the area of the opening through each floor does not exceed 144 square inches (92 900 mm^2).
3. Penetrations by *listed* electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.
4. ~~Penetrations of concrete floors or ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6 where the areas above and below the penetrations are parking areas.~~ Vehicle ramps within or adjacent to parking garages or structures constructed in accordance with Sections 406.5 and 406.6 that are not used for vehicle parking do not require penetrations to comply with Section 714.5.1.1, 714.5.1.2 or 714.5.1.3.

Reason: During the 2021 to 2024 code cycle, Proposal No. FS64-21 introduced a new Exception 4 to Section 714.5.1 which permits unprotected penetrations through floors and ramps of both enclosed and open parking garages where the areas above and below the penetrations are parking areas. We believe this new exception is does not represent good fire protection practices and as such are proposing modifications to the scope of the exception.

The modifications being proposed are intended to limit the application of the exception to vehicle ramps serving parking garage where the ramps are not directly above or below the parking areas. This limitation will minimize the chances of a fire from below involving parked vehicles.

Parking garages often have penetrants (roof drains, electrical conduit, cables, etc.) extending vertically throughout multiple levels of the parking garage. The need to protect penetrations above or below parking areas is critical in preventing ignition of parked vehicles.

The construction of modern vehicles has changed to include more plastics and other combustibles. While this benefits the vehicle weight and fuel economy, and lowers the vehicle price, it increases the fuel load and fire growth we see in parking garages. Modern vehicles present new hazards due to the incorporation of larger quantities of combustible materials (e.g. fuels, plastics, synthetic materials, etc.)

into their designs. Another recent vehicle construction change is the use of plastic fuel tanks. Plastic fuel tanks can result in an earlier release of fuel in a fire. Fire tests at Southwest Research Institute showed fuel leakage as a result of fire exposure occurs after less than five minutes of fire exposure. Fuel spill fires represent a likely means of vehicle-to-vehicle fire spread.1 As alternative fuel vehicles are popularized, concerns regarding their unique hazards, burn characteristics, and typical burn duration have been raised. Compared to older vehicles, modern vehicles burn differently. At the same time, modern parking garages have optimized space requirements for vehicle parking and storage. It is clear that the design assumption of only one or two fire burning has to be revisited. Cars are larger and have more fuel load than before, and the parking spaces have become smaller. This enhances the probability of fire spread between vehicles.

New electric vehicle battery and charging equipment technologies are also leading to much more rapid fire growth than previously contemplated in parking garage design. Fire accidents caused by the thermal runaway of lithium-ion battery have demonstrated that additional fire safety precautions are needed. It is particularly important to prevent these open and closed parking garage fires from occurring due to the challenges the fire services face in fighting parking garage fires.

There have been a number of recent cases and studies around the world that are demonstrating that fire safety in parking garages should be enhanced, not further reduced as done with Exception 4 of Section 714.5. In recent years, Europe has seen a series of large fires (Liverpool, UK (2017); Cork, Ireland (2018); Stavanger Airport in Sola, Norway (2020)1; Warsaw, Poland (2020)) that brought fires in parking garages into the focus of public discussions. In October, 2023, a major multi-storey parking garage fires occurred at the Luton Airport, London resulting in structural collapse.

A 2020 study on fires of electric vehicles concluded that in just 22 seconds, cell thermal runaway spreads flames throughout the battery compartment. A full-scale fire test was carried out on a battery system of seventeen 3P6S battery modules mounted with control systems in a car chassis. One battery module was overcharged until thermal runaway occurred. Within five seconds, thermal runaway spread to the four adjacent modules. Released gas was immediately ignited, with jet flame and smoke, and temperatures reached over 600 °C. These five modules then smouldered, and further modules ignited after around two minutes. The authors note that water fire suppression would be hindered by the battery pack casings.[1]

An NFPA Journal article published in 2019 indicated a typical garage fire today is much more likely to involve multiple vehicles than two decades ago, hinting that fires are in fact burning with more severity. In garage fires between 1995 and 1997, only 1 percent of fires involved more than five vehicles. By contrast, between 2010 and 2014, 8 percent of the garage fires involved more than five vehicles.[2]

The photos below show an example of a parking garage penetration. These photos were taken at the Marriott St Louis Grand Hotel multi-story parking garage. An approximate 12 in. by 12 in. opening was located approximately 4 ft from an adjacent parked car. By the 2024 IBC, this unprotected opening is permitted. Is the level of protection we should be permitting?

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

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

Estimated Immediate Cost Impact:

The average cost of an installed firestop system for concrete floors is $35 - $50 per penetration.

Estimated Immediate Cost Impact Justification (methodology and variables):

The immediate cost impact estimate is based on industry and manufacturer input.This includes materials and labor costs for any type of penetrant through the floor assembly. The cost range includes, sealant based, intumescent, or mechanical devices. The total cost in any given parking garage will depend upon the number of penetrations.

FS47-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee deemed that the proposed text is a necessary clarification. The committee agreed that the proposed text will limit the application of the exception to vehicle ramps serving parking garages where the ramps are not directly above or below the parking areas. This limitation will minimize the chances of a fire from below involving parked vehicles (Vote: 7-4).

FS47-24

Individual Consideration Agenda

Comment 1:

Proponents: David Renn, PE, SE, City and County of Denver, Code Change Committee of ICC Colorado Chapter (david.renn@denvergov.org) requests Disapproved

Reason: Exception 4 for penetrations in parking areas was put into the code as a common sense proposal to match other allowances in the code. In particular, IBC 712.1.10 allows unenclosed vertical openings in parking garages for automobile ramps, elevators, and mechanical duct systems. Also, IBC 715.3 allows unprotected joints in floors and ramps within parking garages and IBC 715.4 allows unprotected voids at the intersection of curtain walls and floors and ramps in parking garages.

Because of this, it is clear that there is no intent in the code to compartmentalize or separate floors or tiers of a parking garage. Note that vehicles can park immediately adjacent to the unenclosed vertical openings and other items mentioned above - there is no difference in hazard when a vehicle parks adjacent to an unprotected pipe penetration.

Until the larger issue of unenclosed vertical openings is addressed in the code, it does not make sense to require penetrations (or joints or voids at curtain walls) to be protected.

Cost Impact: No change to code.

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

Comment (CAH2)# 190

FS49-24

IBC: 714.5.2

Proposed Change as Submitted

Proponents: Jeffrey Grove, Southern Nevada ICC Chapter (jeff.grove@coffman.com)

2024 International Building Code

Revise as follows:

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced. **Exceptions:**

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or *masonry* items where the *annular space* is protected either in accordance with Section 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.
2. Ceiling *membrane penetrations* of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm^2) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the *annular space* between the ceiling membrane and the box does not exceed $^1/_8$ inch (3.2 mm).
3. *Membrane penetrations* by electrical boxes of any size or type, that have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless *listed* otherwise.
5. The *annular space* created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the double 2x wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.
8. The ceiling membrane of a maximum 1-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with a single 2x wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard, provided that all penetrating items through the top plate are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.

~~8.~~ 9. Ceiling *membrane penetrations* by *listed* luminaires (light fixtures) or by luminaires protected with *listed* materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

Reason: The current code language merely requires a “double wood top plate”. As currently written, the top plate could consist of two ½” plywood strips or two 4x8s with no regard to the ability of the material to resist fire. The fact that a clarification statement needed to be added to the code commentary for this item is a clear indication this section needs to be revised. It is important to clarify exactly what the minimum is to achieve the continuity of the membrane rating at the penetration. This code change would allow for a single 2x top plate or a combination of a single 2x top plate with a 1x top plate as a minimum to add clarification to the section. An additional reason for this change is to allow for current construction methods. Standard construction methods in wood construction require a gap to be placed

between the bottom of the floor joists or truss and the top of a non-bearing partition. This allows for deflection of the truss without adverse loading from interference of a non-bearing partition. The standard method for creating this gap is to use a single 2x top plate with a 1x top plate to create a double top plate. Bearing walls and exterior walls are already required to use a double 2x top plate per IBC section 2308.9.3.2 and therefore are not generally affected by this code clarification.

Compliant nailing of the gypsum board can be maintained with a single 2x top plate. In a 1-hour assembly with a single layer of drywall, a single 2x top plate is sufficient to achieve drywall nailing. The standard 2x is 1 ½" thick. If you remove ⅝" for drywall, you are left with ⅞" of plate width for nailing. The required edge distance of a fastener in gypsum board is ⅜" per IBC Section 2508.6.3 allowing an edge distance of ½" on the plate. A standard joint at a stud in a fire rated wall would require ⅜" edge distance for each gypsum sheet leaving only ⅜" edge distance on each side of the stud. This shows that the proposed top plate configuration allows more nailing width than is required in the fire rated assembly.

In a 2 layer assembly, compliant nailing can be achieved with a 2x top plate with a 1x top plate. A 2x, which is 1 ½", and a 1x, which is ¾", will achieve a total top plate thickness of 2 ¼". If one subtracts 1 ¼" for 2 layers of ⅝" gypsum board from 2 ¼", there is 1" remaining. This will allow for ⅜" edge distance on the gypsum sheet as well as ⅝" edge distance on the top plate. This is also in excess of the minimums required for fire rated assemblies.

The 2x with a 1x plate application will also work with resilient channel (RC) and a single layer of gypsum board. The RC is ½" plus the ⅝" gypsum board for a total of 1 ⅛" leaving ¾" of edge distance on the top plate after subtracting the ⅜" drywall edge distance. This would even allow for a full ¾" RC without degrading the fire rating of the assembly.

The order of nailing can also be modified to provide even more edge distance. If the wall sheathing is nailed first, the installer could take full advantage of the entire top plate thickness for edge distance. The ceiling membrane could then be butted tightly to the wall sheathing to achieve the rating. This configuration is demonstrated in U.L. listed assembly system number F-C-2387.

The single wood top plate exceeds the fire resistance of a single layer of ⅝" gypsum board. IBC table 722.6.2(1) assigns a 40 minute rating to ⅝" type x gypsum wall board on wood frame. Table 16.2.1A of the ANSI/AWC National Design Specification for Wood Construction (NDS), as referenced in IBC Section 722.1, assigns a 1-hour char rating to 1 ½" of sawn lumber. Utilizing a single 2x wood top plate as a membrane penetration in a 1 hour application does not reduce the fire resistance rating of the assembly.

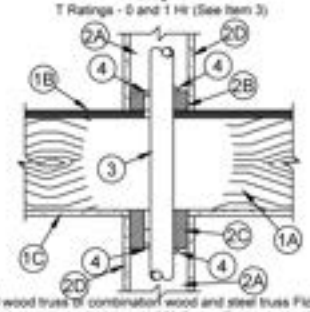
Testing has been performed on this condition and there are currently listed assemblies available. One listing is Specified Technologies Inc. system number F-C-2014 which allows for a single 2x4 or 2x6 top plate. Another listing is 3M system number F-C-2387 which also allows for a single 2x4 or 2x6 top plate. Both of these listings are approved by Underwriters Laboratories to maintain the fire rating of the floor ceiling assembly. It is inappropriate to eliminate options from the code that have been proven by testing to meet the fire resistant requirements.

This proposed change does not limit the design of the building. The design professionals are still free to use a double top plate including 2x and 3x in any situation they deem necessary. This merely allows flexibility for the designer to use different methods while still achieving the required fire ratings.

Classified by
Underwriters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

System No. F-C-2014

F Rating - 1 Hr
T Ratings - 0 and 1 Hr (See Item 3)



1. **Floor Assembly** - The 1 hr fire rated wood truss or combination wood and steel truss Floor-Ceiling assembly shall be constructed of the materials and in the manner described in the individual L500 Series Design in the UL Fire Resistance Directory, as summarized below:
   A. **Joists** - Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   B. **Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Diam of opening in flooring shall be 3/16 to 5/8 in. (5 to 16 mm) larger than the outside diam of nonmetallic pipe or conduit (Item 3).
   C. **Gypsum Board*** - Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Diam of opening shall be 3/16 to 5/8 in. (5 to 16 mm) larger than the outside diam of nonmetallic pipe or conduit (Item 3).
2. **Chase Wall** - (Optional) - The through penetrants (Item 3) may be routed through a single, double or staggered wood stud/gypsum board chase wall and shall include the following construction features:
   A. **Studs** - Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm), 2 by 8 in. (51 by 203 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. **Sole Plate** - Nom 2 by 4 in. (51 by 102 mm) or 2 by 6 in. (51 by 152 mm) lumber plates or double nom 2 by 4 in. (51 by 102 mm) lumber plates tightly butted together. Diam of opening shall be 3/16 to 5/8 in. (5 to 16 mm) larger than the outside diam of nonmetallic pipe or conduit (Item 3).
   C. **Top Plate** - The single or double top plate shall consist of one or two nom 2 by 4 in. (51 by 102 mm) or 2 by 6 in. (51 by 152 mm) lumber plates or one or two sets of nom 2 by 4 in. (51 by 102 mm) lumber plates tightly butted together. Diam of opening shall be 3/16 to 5/8 in. (5 to 16 mm) larger than the outside diam of nonmetallic pipe or conduit (Item 3).
   D. **Gypsum Board*** - Min 1/2 in. thick rated or non-rated gypsum board.
3. **Through Penetrant** - One nonmetallic pipe or conduit to be installed concentrically or eccentrically within the firestop system. Annular space between pipe or conduit and edge of opening to be min 0 in. (point contact) to max 1/2 in. (0 to 13 mm). Pipe to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of nonmetallic pipes may be used:
   A. **Polyvinyl Chloride (PVC) Pipe** - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** - Nom 2 in. (51 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.

   Note: When the annular space is min 1/2 in. T Rating is 1 hr, otherwise the T Rating is 0 Hr.
4. **Fill, Void or Cavity Materials* - Caulk** - Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of sole plate or subfloor. Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with bottom surface of top plate or gypsum board. At the point contact location or when the annulus between the through penetrant and sole plate or subfloor or top plate or gypsum board is 1/8 in. (3 mm) or less, min 1/2 in. (13 mm) diam bead of fill material applied at the through penetrant/sole plate interface or penetreant/top plate or gypsum board interface.

   SPECIFIED TECHNOLOGIES INC - Type WF300 Caulk

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

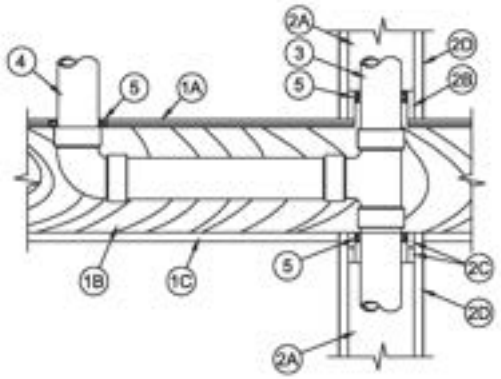
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876

Created or Revised: June 05, 2015

(800)992-1180 • (908)526-8000 • FAX (908)231-8415 • E-Mail:techserv@stifirestop.com • Website:www.stifirestop.com

System No. F-C-2387

March 20, 2009
F Rating – 1 Hr
T Rating – 0 Hr



1. **Floor Assembly** – The 1 hr fire rated wood truss or combination wood and steel truss Floor-Ceiling assembly shall be constructed of the materials and in the manner described in the individual L500 Series Design in the UL Fire Resistance Directory, as summarized below:
   A. **Flooring System** – Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1/2 in. to 1 in. (13 to 25 mm) larger than the outside diam of nonmetallic pipe (Items 4 and 4).
   B. **Joists** – Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and each floor topped.
   C. **Gypsum Board*** – Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick, attached as described in the individual Floor-Ceiling Design.
2. **Chase Wall** – The through penetrant (Item No. 3) shall be routed through a single, double or staggered wood stude/gypsum board chase wall and shall include the following construction features:
   A. **Studs** – Nom 2 by 4 in. (51 by 102 mm) or 2 by 6 in. (51 by 152 mm) lumber studs.
   B. **Sole Plate** – Nom 2 by 4 in. (51 by 102 mm) or 2 by 6 in. (51 by 152 mm) lumber plates. Diam of opening or length of notch-out in sole plate to be 1/2 in. to 1 in. (13 to 25 mm) larger than outside diam of pipe.
   C. **Top Plate** – The single or double top plate shall consist of one or two nom 2 by 4 in. (51 by 102 mm) or 2 by 6 in. (51 by 152 mm) lumber plates. Diam of opening or length of notch-out in top plate to be 1/2 in. to 1 in. (13 to 25 mm) larger than outside diam of pipe.
   D. **Gypsum Board** – Min ½ in. thick rated or nonrated gypsum board.
3. **Through Penetrant** – One nonmetallic pipe to be installed within the firestop system. Pipe to be rigidly supported on both sides of floor-ceiling assembly. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (0 to max 13 mm). The following types and sizes of nonmetallic pipes may be used:
   A. **Polyvinyl Chloride (PVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid-core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   B. **Cellular Core Polyvinyl Chloride (cePVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   C. **Acrylonitrile Butadiene Styrene (ABS) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid-core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   D. **Cellular Core Acrylonitrile Butadiene Styrene (ceABS) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   E. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
4. **Branch Piping** – (Optional) – One nonmetallic pipe to be connected to through penetrant (Item 3) and installed within opening as follows: The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). The following types and sizes of nonmetallic pipes may be used:
   A. **Polyvinyl Chloride (PVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid-core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

System No. F-C-2387 *continued*

D. **Cellular Core Polyvinyl Chloride (cPVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

C. **Acrylonitrile Butadiene Styrene (ABS) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

D. **Cellular Core Acrylonitrile Butadiene Styrene (cABS) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

3. **FILL/Void or Cavity Materials*** – **Caulk or Sealant** – Min 3/4 in. (19 mm) thickness of caulk applied within annular space around perimeter of through-penetrant (Item 3), flush with top surface of floor or sole plate and flush with bottom surface of lower top plate. Min 3/4 in. (19 mm) thickness of caulk applied within annular space around perimeter of branch piping (Item 4), flush with top surface of floor. Min 1/2 in. (13 mm) diam bead applied at the pipe/floor interface.

3M COMPANY

3M FIRE PROTECTION PRODUCTS – CP 25WB+ caulk, IC 15WB+ caulk or FB-3000 WT sealant

(Note: CP 25WB+ not suitable for use with CPVC pipes.)

*Bearing the UL Classification Mark

Through Penetrations | Non-Metallic Pipes | 2000 Series | Wood Frame Floor/Ceiling | FC

Bibliography: Specified Technologies System No. F-C-2014

3M Fire Protection Products System No. F-C-2387

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

Justification for no cost impact:

The code change proposal is not anticipated to increase or decrease the cost of construction This code change proposal is to clarify the intent of the original code change that brought this exception into the code.

FS49-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee concluded that the proposed text is needed. The committee indicated that this is a necessary

requirement for the ceiling membrane of a maximum 1-hour fire-resistance-rated horizontal assembly to be permitted to be interrupted with a single 2x wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard. The added text requires that all-penetrating items through the top plate are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates (Vote: 6-5).

FS49-24

Individual Consideration Agenda

Comment 1:

IBC: 714.5.2

Proponents: Jeffrey Grove, Southern Nevada ICC Chapter (jeff.grove@coffman.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced. **Exceptions:**

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or *masonry* items where the *annular space* is protected either in accordance with Section 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.
2. Ceiling *membrane penetrations* of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm^2) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the *annular space* between the ceiling membrane and the box does not exceed $^1/_8$ inch (3.2 mm).
3. *Membrane penetrations* by electrical boxes of any size or type, that have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless *listed* otherwise.
5. The *annular space* created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the double 2x wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.

8. The ceiling membrane of a maximum 1-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with a single 2x wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard, provided that all penetrating items through the top plate are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates. The bottom of the wood top plate must extend a minimum of ¾" below the ceiling membrane.

9. Ceiling *membrane penetrations* by *listed* luminaires (light fixtures) or by luminaires protected with *listed* materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

Reason: During CAH 1, the opponents were concerned with the ability to achieve fastener edge distances. Upon speaking with the opponents after the hearing, it was determined they wanted clarification that there would be enough wood exposed to achieve proper fastening of the wall membrane. The 3/8" edge distance is in this code and other standards but is not easy to locate and is not associated with this section. Adding the ¾" of exposed bottom plate requirement would insure there is sufficient room to achieve the required fastener edge distance.

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

Justification for no cost impact:

This code change proposal is to clarify the intent of the original code change that brought this exception into the code.

Comment (CAH2)# 487

Comment 2:

IBC: 714.5.2

Proponents: Richard Walke, Creative Technology Inc., Self (richwalke61@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced. **Exceptions:**

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or *masonry* items where the *annular space* is protected either in accordance with Section 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.
2. Ceiling *membrane penetrations* of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm^2) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the *annular space* between the ceiling membrane and the box does not exceed $^1/_8$ inch (3.2 mm).
3. *Membrane penetrations* by electrical boxes of any size or type, that have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless *listed* otherwise.

5. The *annular space* created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the double 2x wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.
8. The ceiling membrane of a maximum 1-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with a minimum of a single 2x wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard, provided the total depth of the top plate(s) exceed the total thickness of the gypsum board and resilient channel on the ceiling by a minimum of 3/4 in., ~~that~~ all penetrating items through the top plate are protected in accordance with Section 714.5.1.1 or 714.5.1.2 ,and the ceiling membrane is tight to the top plates.
9. Ceiling *membrane penetrations* by *listed* luminaires (light fixtures) or by luminaires protected with *listed* materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

Reason: As originally written and as approved at Committee Action Hearing #1, the new Exception 8 is flawed. It specifies the top plate for the minimum 1 hr condition is to consist of a single 2x wood top plate, without regard to the thickness of the gypsum board, or the combination of resilient channel and gypsum board on the ceiling. The vast majority of wall assemblies published in either the UL Product iQ Online Directory or the GA-600 *Fire Resistance and Sound Control Design Manual* require the gypsum board on the wall to be secured to the top plate. The majority of the 1 hr fire-resistance-rated horizontal assemblies published in these same resources require two layers of 1/2 in. thick gypsum board, two layers of 5/8 in. thick gypsum board, or a layer of 1/2 in. deep resilient channel and one layer of 5/8 in. thick gypsum board on the ceiling. In all these conditions, there is insufficient top plate surface remaining to which to fasten the wall panels once the ceiling is installed.

The examples given in the Proponent's Reason statement would suggest compliant nailing can be achieved through the use of additional top plates. While it is true, the language of new Exception 8 does not require those additional top plates. Regardless of the thickness of the ceiling, the requirement of new Exception 8 is a single 2x top plate. As such, the only condition where compliant nailing is achievable with the single 2x top plate is with a ceiling consisting of one layer of 5/8 in. thick gypsum board.

As a reminder, a similar proposal FS67-21 was submitted during the previous code cycle suggesting the use of a single 2x top plate for the 1 hr condition. That proposal was disapproved for the same reason discussed above – an insufficient top plate surface onto which to fasten the wall panels.

In order to resolve this concern, this Comment adds an additional requirement which inter-relates the thickness of the resilient channel and gypsum board on the ceiling with the depth of the top plate member(s). The new requirement specifies the total depth of the top plate(s) exceed the total thickness of the resilient channel and gypsum board by a minimum of 3/4 in. This 3/4 in. then allows the gypsum board on the wall to be secured to the top plate with a minimum 3/8 in. edge clearance between the nail or screw and the edge of the gypsum board as specified by the Gypsum Association.

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

Justification for no cost impact:

The code change proposal is not anticipated to increase or decrease the cost of construction. This code change proposal simply clarifies the intent of the original proposal.

Comment (CAH2)# 473

Comment 3:

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org) requests As Submitted

Reason: AWC supports the committee's approval of FS49-24 in Committee Action Hearing #1. This situation describes a very common issue in wood frame construction where the stud framing for walls are typically installed prior to the gypsum membrane of floor/ceiling assemblies. There is often debate if this is considered a membrane penetration or not. Item 7 in Section 714.5.2 gives criteria for a double top plate to penetrate a two-hour horizontal assembly, which would lead a code user to think that this situation should be considered a membrane penetration. However, this section did not give an option for a single top plate to penetrate a one-hour horizontal assembly. Because the ANSI/AWC *Fire Design Specification (FDS) for Wood Construction* and Chapter 16 of the ANSI/AWC *National Design Specification (NDS) for Wood Construction* both assign a char depth of 1-1/2" at 1-hour, therefore a single 2x wood top plate would be able to be a substitute for the gypsum membrane in these situations without reducing the fire-resistance rating of that horizontal assembly.

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

Comment (CAH2)# 104

FS50-24

IBC: 714.5.2, 714.5.2.1 (New)

Proposed Change as Submitted

Proponents: Jonathan Roberts, UL Solutions, UL Solutions (jonathan.roberts@ul.com)

2024 International Building Code

Revise as follows:

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2.Membrane penetrations by luminaires shall comply with Section 714.5.2.1. ~~Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced.~~ **Exceptions:**

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or *masonry* items where the *annular space* is protected either in accordance with Section 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.
2. Ceiling *membrane penetrations* of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm^2) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the *annular space* between the ceiling membrane and the box does not exceed $^1/_8$ inch (3.2 mm).
3. *Membrane penetrations* by electrical boxes of any size or type, that have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless *listed* otherwise.
5. The *annular space* created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the double wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.
8. ~~Ceiling *membrane penetrations* by *listed* luminaires (light fixtures) or by luminaires protected with *listed* materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.~~

Add new text as follows:

714.5.2.1 Membrane penetrations by luminaires. Penetrations of membranes that are part of a *horizontal assembly* by luminaires (light fixtures) shall comply with one of the following:

1. Luminaires *listed* and *labeled* for use in fire-resistance rated assemblies. The listing shall indicate that the luminaire is suitable for installation in the *horizontal assembly* penetrated with a fire-resistance rating not less than the required rating of the *horizontal assembly* penetrated.
2. Luminaires tested for use in a fire-resistance rated assemblies and are installed in accordance with tested assembly construction specifications.

3. Luminaires protected by an enclosure *listed* and *labeled* for use in fire-resistance designs certified by an *approved agency*.

Reason: This proposal accomplishes the following:

1. Section 714.5.2 currently covers two distinctly different requirements, (a) exceptions to the basic membrane penetration requirements and (b) description of how to cover penetrations by luminaires. This proposal separates the legacy exceptions from the distinctly different luminaire protection requirements, which move to a new 714.5.2.1

2. Section 714.5.2 has been revised to only cover exceptions 1 through 7, and remove reference to luminaires.

3. Section 714.5.2.1 now covers acceptable methods for addressing membrane penetrations by luminaires as follows:

Item 1 covers luminaires that are listed and labeled for use in fire-resistance rated horizontal assemblies. The reference to the listing indicating that the luminaire is suitable for the horizontal assembly penetrated is consistent with how these products are listed. Additional information on this can be found in the guide information for Luminaires, Luminaire Assemblies and Luminaire Enclosures Certified for Fire Resistance (CDHW).

Item 2 addresses the requirements that were previously in exception 8 in a more concise fashion. The reference in exception 8 allowing "luminaires protected with listed materials" was eliminated because we are not aware of materials that have been listed for this application.

Item 3 addresses the requirements for enclosures that have been tested for use in specific fire-resistance rated horizontal designs. The approved agency language is consistent with Section 703.2.2(5).

4. The ambiguous requirement in 713.5.2 that indicate "recessed fixtures shall be installed such that the required fire resistance will not be reduced" has been replaced in 714.5.2.1 with more definitive wording.

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

Justification for no cost impact:

Listing for luminaires (light fixtures) that are membrane penetrations regulated by this section of the code currently have a "listing" option (part of the list of exceptions) for compliance with the requirement to maintain fire resistance. As listing as an option is currently included in this code, so there is no additional cost impact. The proposal is a simple editorial revision to provide clarity for the code official with the methods by which to determine code compliance.

FS50-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee approved the proposed language based on the proposal's reason statement (Vote: 11-0).

FS50-24

Individual Consideration Agenda

Comment 1:

IBC: 714.5.2, 714.5.2.1

Proponents: Richard Walke, Creative Technology Inc., Self (richwalke61@gmail.com) requests As Modified by Committee (AMC2)

Further modify as follows:

2024 International Building Code

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.5.1.1 or 714.5.1.2. Membrane penetrations by luminaires shall comply with Section 714.5.2.1.

Exceptions:

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or *masonry* items where the *annular space* is protected either in accordance with Section 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.
2. Ceiling *membrane penetrations* of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm^2) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the *annular space* between the ceiling membrane and the box does not exceed $^1/_8$ inch (3.2 mm).
3. *Membrane penetrations* by electrical boxes of any size or type, that have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing. Protected electrical boxes shall be installed such that the *fire-resistance rating* of the *horizontal assembly* is not reduced.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless *listed* otherwise.Electrical boxes shall be installed such that the *fire-resistance rating* of the *horizontal assembly* is not reduced.
5. The *annular space* created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the double wood top plate of a wall assembly that is sheathed with *Type X gypsum wallboard*, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.

714.5.2.1 Membrane penetrations by luminaires. Penetrations of membranes that are part of a *horizontal assembly* by luminaires (light fixtures) shall comply with one of the following:

1. Luminaires *listed* and *labeled* for use in fire-resistance rated assemblies. The *listing* shall indicate that the luminaire is suitable for installation in the *horizontal assembly* penetrated with a *fire-resistance rating* not less than the required rating of the *horizontal assembly* penetrated.
2. Luminaires tested for use in a fire-resistance rated ~~assemblies~~ assembly and are installed in accordance with tested assembly construction specifications.
3. Luminaires protected by an enclosure *listed* and *labeled* for use in fire-resistance designs certified by an *approved agency*. The *listing* shall indicate the enclosure is suitable for installation with luminaires in the *horizontal assembly* penetrated with a *fire-resistance rating* not less than the required rating of the *horizontal assembly* penetrated.

Reason: This Comment is intended to address two issues associated with FS50-24 which was Approved as Submitted in Committee Action Hearing #1, as follows:

1. In developing FS50-24, UL Solutions deleted the statement "Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire-resistance* will not be reduced." This a key provision which differentiates the performance requirements between recessed membrane penetrations and other membrane penetrations such as pipe or cable penetrations. As such, it is needed to understand the expected level of performance for recessed membrane penetrations. If protecting a typical pipe or cable membrane penetration other than the configuration covered in Exception 1 of Section 714.5.2, the first sentence of the charging language of Section 714.5.2 would apply. These penetrations would be protected so as to comply with Sections 714.5.1.1 or 714.5.1.2. If tested in the approved fire-resistance-rated assembly based on Section 714.5.1.1, the temperature limitation of ASTM E119 or UL 263 would apply. If tested in accordance with ASTM E814 or UL 1479 based on Section 714.5.1.2, the temperature limitation component of a T Rating would be required unless the penetration met one of the exceptions of that Section. If protecting a recessed membrane penetration based on either Section 714.5.1.1 or 7145.1.2, the temperature limitation would always be required as none of the T Rating exceptions of Section 714.5.1.2 would apply. However, if protecting a recessed membrane penetration based on the performance-based Exceptions 3 or 4 of Section 714.5.2, that deleted sentence is needed in order to understand whether the temperature limitations apply or not. As such, this Comment adds the deleted sentence to Exceptions 3 and 4, in a clarified format.
2. This Comment corrects what is believed to be a typo in Section 714.5.2.1(2) of the original proposal.

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

Justification for no cost impact:

The reinsertion of the phrase relating to "... recessed fixtures shall be installed such that the required fire-resistance is not reduced" into Exceptions 3 and 4 of Section 714.5.1 has no cost impact as this requirement is currently in the 2024 IBC.

Listing for luminaires (light fixtures) that are membrane penetrations regulated by this section of the code currently have a "listing" option (part of the list of exceptions) for compliance with the requirements to maintain fire resistance. As the listing option is currently included in the code, there is no additional cost impact for luminaires.

Comment (CAH2)# 640

FS53-24

IBC: 715.3

Proposed Change as Submitted

Proponents: Jeffrey Grove, Southern Nevada ICC Chapter (jeff.grove@coffman.com)

2024 International Building Code

Revise as follows:

715.3 Fire-resistance-rated assembly intersections. *Joints* installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an *approved fire-resistant joint* system designed to resist the passage of fire for a time period not less than the required *fire-resistance rating* of the wall, floor or roof in or between which the system is installed. **Exception:** *Fire-resistant joint systems* shall not be required for *joints* in the following locations:

1. Floors within a single *dwelling unit*.
2. Floors where the *joint*s protected by a *shaft enclosure* in accordance with Section 713.
3. Floors within *atriums* where the space adjacent to the *atrium* is included in the volume of the *atrium* for smoke control purposes.
4. Floors within *malls*.
5. Floors and ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6.
6. *Mezzanine* floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control *joints* not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E119 or UL 263.
10. The intersection of exterior curtain wall assemblies and the roof slab or *roof deck*.
11. Between the bottom of a fire-resistance-rated wall and a floor or floor/ceiling assembly, unless the wall abuts two or more interconnected levels.

Reason: Based on the following, fire-resistive joint systems are not required or necessary where a fire-resistance-rated wall is supported by (sits on) a floor or floor/ceiling assembly.

Although the charging section can be interpreted to apply, the assemblies in question do not meet the definition of a joint in Chapter 2 of the 2024 IBC.

> **JOINT.** The opening in or between adjacent assemblies that is created due to building tolerances, or is designed to allow independent movement of the building in any plane caused by thermal, seismic, wind or any other loading.

Where a wall is supported by a floor or floor/ceiling assembly, the bottom of a wall is not designed to allow independent movement. Although “building tolerances” is not defined in the IBC, these assemblies also have little if any tolerances due to the methods of construction. As such, the bottom of a fire-resistance-rated wall does not constitute a joint within the intent of Section 715 and additional protection is not required.

Furthermore, the Gypsum Association manual (GA-216) specifies that “Gypsum panel products applied to walls shall be applied with the bottom edge spaced a minimum of 1/4 in. (6 mm) above the floor.” Drywall is attached to studs, which are connected to a base plate and, as such, there will rarely if ever be a gap at the bottom of a wall sufficient to allow migration of fire, smoke or superheated gasses.

In addition, NFPA® 80, the Standard for Fire Doors and Other Opening Protectives specifies that “Clearance under the bottom of a door shall be a maximum of 3⁄4 in. (19 mm).” This is an indication that the bottom of a fire-resistance-rated wall assembly isn’t as critical as the

top, or even the sides.

Based on the preceding, it is clear that joint protection in accordance with Section 715.3 is not required for bottom of wall assemblies and provides little to no additional protection.

THE PHYSICS:

During a fire, the room of origin becomes positively pressurized above the neutral plane and negatively pressurized below the neutral plane. As such, fire, smoke and superheated gasses will rarely if ever migrate from the room of origin into adjacent spaces at the bottom of a wall and protection at the bottom of the wall contradicts the physics of the requirement.

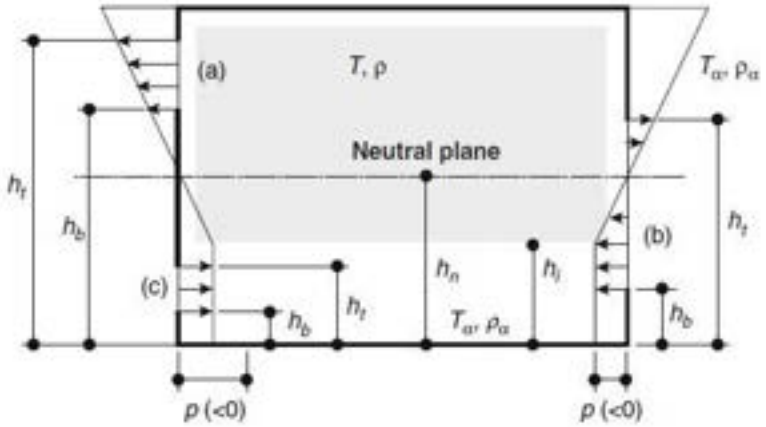


Figure 15.24 from the SFPE Handbook of Fire Protection Engineering – Fifth Edition.

Bibliography: SFPE Handbook of Fire Protection Engineering, Fifth Edition
NFPA® 80, the Standard for Fire Doors and Other Opening Protectives

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

Estimated Immediate Cost Impact:

Installation of a listed joint system between the bottom of a fire-resistance-rated wall and the floor that supports it ranges from $3 - $4.5 per lineal foot. As such, this clarification of code intent will reduce the cost of construction.

Estimated Immediate Cost Impact Justification (methodology and variables):

Cost information was obtained from mechanical vendors and contractors.

FS53-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed text is too broad and needs more work. The committee encouraged the proponent to work on limited use (Vote: 12-0).

FS53-24

Individual Consideration Agenda

Comment 1:

Proponents: Jeffrey Grove, Southern Nevada ICC Chapter (jeff.grove@coffman.com) requests As Submitted

Reason: Movement is expected between the top plate and the floor/floor-ceiling assembly above, as well as vertical joints between rated walls. Where a wall is supported by a floor or floor/ceiling assembly, the bottom of a wall is not designed to allow independent movement. I'm sure we will all agree a CMU wall will have little to no associated gap at the bottom and additional protection is unnecessary. Drywall is rigidly attached vertically to studs and horizontally to the top plate and the sill plate/bottom plate. Due to the ridged attachment at the bottom of a wall, there will rarely if ever be a gap at the bottom sufficient to allow migration of fire, smoke or superheated gasses. Although "building tolerances" is not defined in the IBC, these assemblies also have little if any tolerances due to the methods of construction. As such, the bottom of a fire-resistance-rated wall does not constitute a joint within the intent of Section 715 and additional protection is not required.

Since drywall must be rigidly attached to the sill plate/bottom plate (typically a nominal 2 X 4 sleeper), it's unlikely drywall will ever be attached more than one inch above the floor and the space below the drywall will be filled by the sill plate/bottom plate. In addition, a base board will almost always be included to hide the gap between the wallboard and the sill plate/bottom plate. As such, there is essentially no gap at the bottom of a wall constructed of drywall.

Furthermore, the test furnace pressurizes the upper portion of the furnace and draws air into the furnace from the bottom of the wall assembly being tested. As such, almost any material (including nothing) can be expected to pass the test. If the concern is a room fire forcing super-heated gasses and flames under a wall assembly, the test must be modified to demonstrate this condition.

It needs to be clear that the bottom of a wall does not meet the definition of a joint and is not presently required to be protected, as well as present testing is not adequate to address this concern. If the voting members feel this level of protection is prudent, the code and the associated test must be modified appropriately to reflect this condition.

THE PHYSICS (Supplemented):

A shaft or other wall that abuts two or more interconnected levels may experience leakage through the gap at the bottom of a wall sufficient to allow migration of fire, smoke or superheated gasses as demonstrated in the figure included with this comment, which is from the SFPE Handbook of Fire Protection Engineering – Fifth Edition.

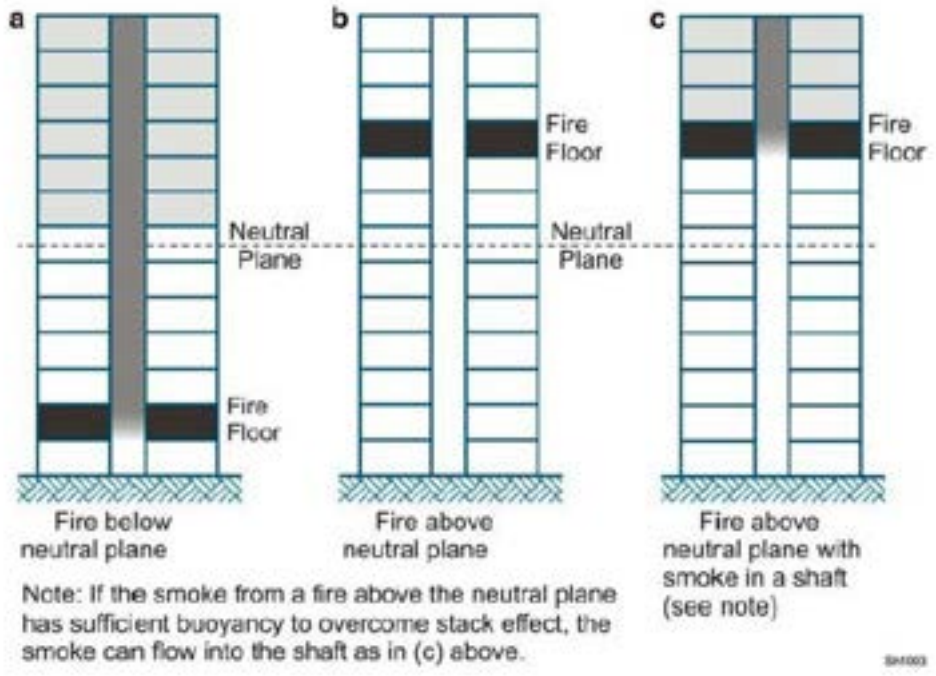


Fig. 50.6 Smoke movement in a high rise building due to normal stack effect

Bibliography: SFPE Handbook of Fire Protection Engineering, Fifth Edition

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

FS55-24

IBC: 715.3, 715.4

Proposed Change as Submitted

Proponents: William Koffel, Koffel Associates, Inc., Firestop Contractors International Association (FCIA) (wkoffel@koffel.com)

2024 International Building Code

Revise as follows:

715.3 Fire-resistance-rated assembly intersections. *Joints* installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an *approved fire-resistant joint* system designed to resist the passage of fire for a time period not less than the required *fire-resistance rating* of the wall, floor or roof in or between which the system is installed. **Exception:** *Fire-resistant joint systems* shall not be required for *joints* in the following locations:

1. Floors within a single *dwelling unit*.
2. Floors where the *joint* is protected by a *shaft enclosure* in accordance with Section 713.
3. Floors within *atriums* where the space adjacent to the *atrium* is included in the volume of the *atrium* for smoke control purposes.
4. Floors within *malls*.
5. Floors and ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6.
6. *Mezzanine* floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control *joints* not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E119 or UL 263.
10. ~~The intersection of exterior curtain wall assemblies and the roof slab or *roof deck*.~~

715.4 Exterior curtain wall/fire-resistance-rated floor intersections. Voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor, ~~or~~ floor/ceiling, roof, or roof/ceiling assemblies shall be protected with an *approved perimeter fire containment system* to prevent the ~~interior~~ spread of fire. Such systems shall provide an *F rating* for a time period not less than the *fire-resistance rating* of the floor or floor/ceiling assembly.

Exceptions: An approved perimeter fire containment system shall not be required for voids in the following locations:

1. Floors within a single *dwelling unit*.
2. Floors and ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6.
3. *Mezzanine* floors.

Reason: Exception 10 is inappropriately located in Section 715. Section 715.3 addresses fire-resistant joint systems, whereas Exception 10 addresses perimeter fire containment systems and should be deleted.

Protecting the breach made at the roof level brings needed firefighter protection while handling firefighting operations from the rooftop.

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

Estimated Immediate Cost Impact:

$35 - $50 per lineal foot of perimeter containment system to be protected.

Estimated Immediate Cost Impact Justification (methodology and variables):

Based on industry and manufacturer input, the average cost of an installed perimeter containment system is $35 - $50/ linear ft.

This includes materials and labor costs for application. The cost estimate is conservative in that if a perimeter containment system is not required, there is still some protection of the intersection that would be required at the roof or roof/ceiling level.

FS55-24

Public Hearing Results (CAH1)

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

Committee Modification:
715.4 Exterior curtain wall/fire-resistance-rated floor intersections. Voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor, floor/ceiling, roof, or roof/ceiling assemblies shall be protected with an *approved perimeter fire containment system* to prevent the interior spread of fire. Such systems shall provide an *F rating* for a time period not less than the *fire-resistance rating* of the floor or floor/ceiling assembly.
Exceptions: An approved perimeter fire containment system shall not be required for voids in the following locations:

1. Floors within a single *dwelling unit*.
2. Floors and ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6.
3. *Mezzanine* floors.

Committee Reason: The committee agreed that the modification adds back "interior" to the original proposal. The main proposal provides clarity to the code requirements (Vote: 11-1).

FS55-24

Individual Consideration Agenda

Comment 1:

Proponents: David Renn, PE, SE, City and County of Denver, Code Change Committee of ICC Colorado Chapter (david.renn@denvergov.org) requests Disapproved

Reason: Section 715.4: This proposal adds a requirement for a perimeter fire containment system between curtain wall assemblies and roof or roof/ceiling assemblies and the only reason given is that it brings needed firefighter protection while handling firefighting operations from the rooftop. This "needed" protection was not backed up with any information that indicates this is an actual issue that needs to be addressed. Since there is no smoke accumulation at the roof, a breach at the perimeter of the roof shouldn't affect firefighting operations. Also, if this is an issue, why didn't this proposal include a change to 715.5 for the void between curtain wall assemblies and nonfire-resistance-rated roof or roof/ceiling assemblies? 715.5 has no requirements for a roof condition.

Furthermore, 712.1.15 currently allows unprotected skylights and other penetrations through the roof and FS37-24 was approved that expands this to all roof openings. With unprotected openings allowed, why does the perimeter void need to be protected? The committee

indicated that this proposal was approved since it provides clarity to the code requirements, but instead it adds a code requirement without justification.

Lastly, this proposal doesn't change the F rating requirements for the added roof or roof/ceiling assemblies, so if approved would require the perimeter fire containment system at the roof or roof/ceiling assembly to have an F rating for the floor or floor/ceiling assembly, which is often a higher rating than required for a roof or roof/ceiling assembly.

Section715.3: This proposal deletes Exception 10 from the requirement for fire-resistant joint systems between fire-resistance-rated assemblies. The reason statement indicates that this was done since Exception 10 is for perimeter fire containment systems (which are in 715.4) so this should be deleted. This reason is incorrect in that 715.3 Exception 10 is for a joint between a fire-resistance-rated roof and a fire-resistance-rated curtain wall, while 715.4 deals with a nonfire-resistance-rated curtain wall. These two sections are for different conditions with different test requirements for fire-resistant joint systems versus perimeter fire containment systems. This exception should remain with the same reasoning as noted above for the perimeter fire containment systems.

Cost Impact: No change to code.

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

Comment (CAH2)# 191

FS56-24

IBC: 715.4, 715.5

Proposed Change as Submitted

Proponents: Tony Crimi, A.C. Consulting Solutions Inc., North American Insulation Manufacturers Association (tcrimi@sympatico.ca)

2024 International Building Code

Revise as follows:

715.4 Exterior curtain wall/fire-resistance-rated floor intersections. Voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor or floor/ceiling assemblies shall be protected with an *approved perimeter fire containment system* to prevent the interior spread of fire. Such systems shall provide an *F rating* for a time period not less than the *fire-resistance rating* of the floor or floor/ceiling assembly. **Exceptions:** An approved perimeter fire containment system shall not be required for voids in the following locations:

1. Floors within a single *dwelling unit*.
2. ~~Floors and ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6.~~
3. ~~3~~ 2. *Mezzanine* floors.

715.5 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance-rated floor or floor/ceiling assemblies shall be filled with an *approved* material or system to retard the interior spread of fire and hot gases.

Exceptions: An *approved* material or system to retard the interior spread of fire and hot gases shall not be required for voids in the following locations:

1. Floors within a single *dwelling unit*.
2. ~~Floors and ramps within parking garages or *structures* constructed in accordance with Sections 406.5 and 406.6.~~
3. ~~3~~ 2. *Mezzanine* floors.

Reason: During the 2024 code cycle, Proposal No. FS75-21 introduced several exceptions to the requirements to protect perimeter voids in open and closed parking garages for both rated and non-rated floor construction. With this change, perimeter openings are not required to be filled with any material, leaving them entirely open though all floors of the parking garage, in a direct vertical path for flames and hot gases to travel. Voids at curtain walls extend long distances throughout an entire parking structure. The openings will often be located directly above or below parked vehicles, which can further complicate fire fighting operations with multiple floors engaged in fire.

Modern vehicles present new hazards due to the incorporation of larger quantities of combustible materials (e.g. fuels, plastics, synthetic materials, etc.) into their designs. Another recent vehicle construction change is the use of plastic fuel tanks. According to the American Chemistry Council, modern vehicles are now composed of about 50 percent plastic by volume, even though plastics account for only 10 percent of the average vehicle's weight. Industry experts believe that as better technologies and additional fuel-efficiency mandates kick in, the percentage of plastics in cars will only increase.[1] As alternative fuel vehicles are popularized, concerns regarding their unique hazards, burn characteristics, and typical burn duration have been raised. Compared to older vehicles, modern vehicles burn differently. At the same time, modern parking garages have optimized space requirements for vehicle parking and storage. It is clear that the design assumption of only one or two fire burning has to be revisited. Cars are larger and have more fuel load than before, and the parking spaces have become smaller. This enhances the probability of fire spread between vehicles.

New electric vehicle battery and charging equipment technologies are also leading to much more rapid fire growth than previously contemplated in parking garage design. Fire accidents caused by the thermal runaway of lithium-ion battery have demonstrated that

additional fire safety precautions are needed. It is particularly important to prevent these open and closed parking garage fires from occurring due to the challenges the fire services face in fighting parking garage fires.

An NFPA Journal article published in 2019 indicated a typical garage fire today is much more likely to involve multiple vehicles than two decades ago, hinting that fires are in fact burning with more severity. In garage fires between 1995 and 1997, only 1 percent of fires involved more than five vehicles. By contrast, between 2010 and 2014, 8 percent of the garage fires involved more than five vehicles.[2] In the United States, Corporate Average Fuel Efficiency standards mandate that passenger vehicle fleets average 54.5 miles per gallon by 2025. To meet those requirements, it is expected that the average car will incorporate nearly 350 kilograms of plastics, up from 200 kilograms in 2014, according to an analysis by IHS Chemical, a chemical industry research group.[1]

Bibliography: [1] NFPA Journal - Protecting Parking Garages, Mar Apr 2019, Ramp Risk, By Jesse Roman.
[2]NFPA Research Foundation - Modern Vehicle Hazards in Parking Structures and Vehicle Carriers by Haavard Boehmer, PE, Michael Klassen, PhD, PE, Stephen Olenick, PE

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

Estimated Immediate Cost Impact:

Based on the 2024 IBC, the proposal will increase the cost of construction. However, the proposal would bring the cost of construction back to the level of the 2021 and prior IBC editions. Because the 2024 edition is not yet widely adopted, the cost impact is limited at this time.

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal would bring the cost of construction back to the level of the 2021 and prior IBC editions. The approximate installed cost is $7-10 per lineal foot.

FS56-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal to be consistent with the action taken on FS54-24 (Vote: 9-3).

FS56-24

Individual Consideration Agenda

Comment 1:

IBC: 715.4, 715.5

Proponents: Tony Crimi, A.C. Consulting Solutions Inc., North American Insulation Manufacturers Association (tcrimi@sympatico.ca) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

715.4 Exterior curtain wall/fire-resistance-rated floor intersections. Voids created at the intersection of exterior curtain wall

assemblies and fire-resistance-rated floor or floor/ceiling assemblies shall be protected with an *approved perimeter fire containment system* to prevent the interior spread of fire. Such systems shall provide an *F rating* for a time period not less than the *fire-resistance rating* of the floor or floor/ceiling assembly. **Exceptions:** An approved perimeter fire containment system shall not be required for voids in the following locations:

1. Floors within a single *dwelling unit*.
2. Ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
2 3. *Mezzanine* floors.

715.5 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance-rated floor or floor/ceiling assemblies shall be filled with an *approved* material or system to retard the interior spread of fire and hot gases.

Exceptions: An *approved* material or system to retard the interior spread of fire and hot gases shall not be required for voids in the following locations:

1. Floors within a single *dwelling unit*.
2. Ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
2 3. *Mezzanine* floors.

Reason: During CAH #1, the committee mentioned that the code allows for open floors between levels in parking garages, so to have a protected joint adjacent to an opening that is floor-to-floor, does not make sense. However, those floor openings are only in areas without vehicle parking. The area at the perimeter of a parking garage would be open floor-to-floor directly adjacent to vehicle parking areas.

Since the CAH#1 hearings, NFPA Research Foundation has released their Phase II Report on vehicle hazards in parking structures. This Phase II effort aimed to update the 2020 report's analysis and identify fire safety knowledge gaps. The expanded analysis covered various aspects, including parking structure characteristics, parking garage fire statistics, vehicle composition data, applicable codes and standards, and representative fire incidents. Additionally, it reviewed published data on full-scale fire tests with modern vehicles, compiling this information into a database for further analysis.[1] The report concludes, in part:

"Based upon the analysis of the issues at hand and the available literature, three primary knowledge gaps were identified. First, the proper NFPA 13 hazard classification for modern vehicles in a parking garage is unclear. While codes and standards have evolved to require sprinklers in more new parking garages and have also increased the necessary sprinkler water density, the technical justification for selection of the water density is lacking. Code- and standards-making bodies have indicated uncertainty about what the proper sprinkler water density should be to prevent fire spread in parking structures. The review of the literature and incidents has indicated that, in general, if water is applied by sprinklers, the vehicle-to-vehicle fire spread does not occur. But there is a question of whether that is just because a worst-case scenario has not yet been encountered. The technical justification for the proper sprinkler water density in parking structures should be based on testing or data."[1]

In short, it is premature to permit open floor-to-floor perimeter areas that are adjacent to parked vehicles.

Bibliography: [1]NFPA Research Foundation - Classification of Modern Vehicle Hazards in Parking Structures & Systems – Ph II by Stephen Olenick, Michael Klassen, Nasir Hussain Combustion Science & Engineering, Maryland, USA, May 2024

Cost Impact: Increase

Estimated Immediate Cost Impact:

Based on the 2027 IBC, the proposal will increase the cost of construction. The proposal would bring the cost of construction back to the level of the 2024 and prior IBC editions.

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal would bring the cost of construction back to the level of the 2021 and prior IBC editions. The approximate installed cost is $7-10 per lineal foot.

Comment (CAH2)# 386

FS61-24

IBC: TABLE 716.1(2)

Proposed Change as Submitted

Proponents: Richard Walke, Creative Technology Inc., SAFTIFIRST (richwalke61@gmail.com)

2024 International Building Code

Revise as follows:

TABLE 716.1(2) OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[a]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[b, c]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance[i]
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4		3	See Note a	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1\frac{1}{2}$		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	$1\frac{1}{2}$	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours)[e]	Each wall of the double-wall assembly (hours)[f]			—				
	4	3	3	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	$1\frac{1}{2}$	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps.	2		$1\frac{1}{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire walls[g]	4		3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1		1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.=D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
						Fire protection			
Other fire barriers	1		$\frac{3}{4}$	Maximum size tested	D-H-45	$\frac{3}{4}$[h]		D-H-45[h]	
Fire partitions: Corridor walls	1		$\frac{1}{3}$[a]	Maximum size tested	D-20	$\frac{3}{4}$[a]		D-H-OH-45	
	0.5		$\frac{1}{3}$[a]	Maximum size tested	D-20	$\frac{1}{3}$		D-H-OH-20	
Other fire partitions	1		$\frac{3}{4}$[i]	Maximum size tested	D-H-45	$\frac{3}{4}$		D-H-45	
	0.5		$\frac{1}{3}$	Maximum size tested	D-H-20	$\frac{1}{3}$		D-H-20	
Exterior walls	3		$1\frac{1}{2}$	100 sq. in.[a]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	Maximum size tested	D-H 90 or D-H-W-90	$1\frac{1}{2}$[h]	2	D-H-OH-90[h]	W-120
						Fire protection			

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE-RATED GLAZING MARKING DOOR VISION PANEL	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Smoke barriers	1	$^3/_4$	Maximum size tested	D-H-45	$^3/_4$[h]		D-H-45[h]	
	1	$^1/_3$	Maximum size tested	D-20	Fire protection $^3/_4$		D-H-OH-45	

For SI: 1 square inch = 645.2 mm.

a. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.

b. Under the column heading “Fire-rated glazing marking door vision panel,” W refers to the fire-resistance rating of the glazing, not the frame.

c. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.

d. Two doors, each with a fire protection rating of $1^1/_2$ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

e. As required in Section 706.4.

f. As allowed in Section 4.6 of NFPA 221.

g. See Section 716.2.5.1.2.

h. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

i. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

j. See Section 716.2.5.4 for requirements for fire-resistance-rated glazing installed in sidelight/transom panels.

Reason: This proposal is intended to clarify the type of glazing and frame required in sidelights and transoms in applications where fire-protection-rated glazing is not permitted. Where this issue gets confusing is that for Door Vision Panels which exceed the allowable size for fire-protection-rated glazing, fire-resistance-rated glazing may be used within the typical glass light kit. These glass light kits are considered to be fire-protection-rated in that like the door in which they are installed, they will not meet the heat transmission requirements of ASTM E119 and UL 263. However, when fire-protection-rated glazing is not permitted in sidelights and transoms, a fire-resistance-rated glazing and frame assembly having a fire-resistance rating based on testing the combination of the glazing and frame assembly in accordance with ASTM E119 or UL 263 must be used. The new Footnote j clarifies this point by referencing the code user to Section 716.2.5.4 where the required glazing and frame are clarified. There are multiple fire resistance designs published by the various Nationally Recognized Testing Laboratories which can be used to show compliance with this requirement.

It is believed this new footnote will reduce the confusion on the type of glazing and frame required and help ensure the proper glazing and frame is used in this application.

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

Justification for no cost impact:

The proposed changes simply clarity the existing requirements.

FS61-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee agreed with the proposed clarification to the type of glazing and frame required in sidelights and transoms in applications where fire protection-rated glazing is not permitted (Vote: 11-1).

FS61-24

Individual Consideration Agenda

Comment 1:

Proponents: Thom Zaremba, Roetzel & Andress, National Glass Association (tzaremba@ralaw.com); Nicholas Resetar, Primary Fire Rated Glazing Manufacturers (nresetar@ralaw.com) requests Disapproved

Reason: Although FS61-24 may be well intentioned, it should be disapproved for three reasons. First, it will actually make Table 716.1(2) more, not less, confusing. Second, it is, simply, not necessary. Third, no evidence of any actual confusion has been presented to warrant adding yet another foot note to Table 716.2(1).

The first sentence of its reason statement says: "This proposal is intended to clarify the type of glazing and frame required in sidelights and transoms ...." However, the change approved at the Public Comment Hearing does not clarify Table 716.1(2). It will actually make Table 716.1(2) more confusing for those using it.

The confusion that FS61-24 creates is found in the lower half of the main vertical column where the Proponent places its proposed foot note. There, the main column goes back and forth several times from having two sub-columns to having only one sub-column. Where "Fire barriers having a required fire-resistance rating of 1 hour" changes to "Other fire barriers," the main column merges into a single column that only contains "fire protection" markings. Then, where "Other fire barriers" changes to "Exterior walls" the main column again breaks into two sub-columns, with both "fire protection" and "fire-resistance" markings. Finally, where "Exterior walls" changes to "Smoke barriers," the main column merges again into a single column containing only "fire protection" markings.

Putting the new foot note in the sub-column entitled "Fire Resistance," will leave those using Table 716.1(2) to ask whether the new foot note does or does not apply to those areas of the main vertical column that only has one sub-column? The foot note would only properly apply to fire-resistance rated assemblies, but where the main column has only one sub-column, the Table only references fire protection rated markings! Nothing in FS61-24 answers whether the text of FS61-24's foot note is intended to apply to those single sub-column areas or not.

In addition to adding confusion, FS61-24 is not even necessary. Table 716.1(2) was never intended to be a substitute for the mandatory requirements spelled out in the text of Chapter 7. Instead, it was added to Chapter 7 to summarize Chapter 7's requirements. Does every entry in Table 716.1(2) need a pointer, like the one proposed in FS61-24? No, of course not. Moving back and forth from one foot note to another to and from one cell after another and back again only makes the Table harder to read and harder to use.

Another pointer should only be added to this Table if it has been established that actual confusion exists requiring it. Here, no evidence of any actual confusion has been presented to warrant adding yet another foot note to Table 716.1(2).

Because it adds confusion, is unnecessary, and is without any substantiating evidence of actual confusion, we urge the Committee to

disapprove FS61-24.

Cost Impact: No change to code.

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

Comment (CAH2)# 506

FS62-24

IBC: TABLE 716.1(2), 716.2.5.4

Proposed Change as Submitted

Proponents: Richard Walke, Creative Technology Inc., SAFTIFIRST (richwalke61@gmail.com)

2024 International Building Code

Revise as follows:

TABLE 716.1(2) OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[a]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[b, c]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4		3	See Note a	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1\frac{1}{2}$		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	$1\frac{1}{2}$	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours)[e]	Each wall of the double-wall assembly (hours)[f]			—				
	4	3	3	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	$1\frac{1}{2}$	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps.	2		$1\frac{1}{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire walls[g]	4		3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1		1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.=D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
						Fire protection			
Other fire barriers	1		$\frac{3}{4}$[h]	Maximum size tested	D-H-45	$\frac{3}{4}$[h]		D-H-45[h]	
Fire partitions: Corridor walls	1		$\frac{1}{3}$[a]	Maximum size tested	D-20	$\frac{3}{4}$[a]		D-H-OH-45	
	0.5		$\frac{1}{3}$[a]	Maximum size tested	D-20	$\frac{1}{3}$		D-H-OH-20	
Other fire partitions	1		$\frac{3}{4}$[i]	Maximum size tested	D-H-45	$\frac{3}{4}$		D-H-45	
	0.5		$\frac{1}{3}$	Maximum size tested	D-H-20	$\frac{1}{3}$		D-H-20	
Exterior walls	3		$1\frac{1}{2}$	100 sq. in.[a]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE-RATED GLAZING MARKING DOOR VISION PANEL	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
	2	$1^1/_2$	~~Maximum size tested~~ 100 sq. in.[a] ~~or~~ > 100 sq. in = D-H-W-90	≤ 100 sq. in. = D-H 90	~~1 1/2 h~~ Not Permitted	2	~~D-H-OH-90[h]~~ Not Permitted	W-120
Smoke barriers	1	$^3/_4$	Maximum size tested	D-H-45	Fire protection $^3/_4$[h]		D-H-45[h]	
	1	$^1/_3$	Maximum size tested	D-20	Fire protection $^3/_4$		D-H-OH-45	

For SI: 1 square inch = 645.2 mm.

a. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.

b. Under the column heading “Fire-rated glazing marking door vision panel,” W refers to the fire-resistance rating of the glazing, not the frame.

c. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.

d. Two doors, each with a fire protection rating of $1^1/_2$ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

e. As required in Section 706.4.

f. As allowed in Section 4.6 of NFPA 221.

g. See Section 716.2.5.1.2.

h. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

i. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

716.2.5.4 Fire door frames with transom lights and sidelights. Fire-protection-rated glazing shall be permitted in door frames with transom lights, sidelights or both, where a $^3/_4$-hour *fire protection rating* or less is required ~~and in 2-hour fire-resistance-rated *exterior walls*~~ in accordance with Table 716.1(2). *Fire door* frames with transom lights, sidelights or both, installed with fire-resistance-rated glazing tested as an assembly in accordance with ASTM E119 or UL 263 shall be permitted where a *fire protection rating* exceeding $^3/_4$ hour is required in accordance with Table 716.1(2).

Reason: This proposal is intended to increase the required level of fire performance for glazing within fire door assemblies and within sidelights and transom panels in 2 hr exterior walls applications. In doing so, it also brings consistency within Table 716.1(2) for all applications requiring a fire door / fire shutter rating in excess of 3/4 hr.

The revisions to Table 716.1(2) and Section 716.2.5.4 are specifically intended to limit the allowable area of fire-protection-rated glazing in 1-1/2 hr fire-protection-rated fire door assemblies in exterior walls to a maximum of 100 sq. in. If more than 100 sq. in. of glazing is

needed, then fire-resistance-rated glazing is required. In addition, this proposal is intended to require sidelights and transoms adjacent to these doors to be glazed with fire-resistance-rated glazing in recognition of the relatively large sections of glazing typical installed in the sidelights and transoms.

Both fire-protection-rated glazing and fire-resistance-rated glazing are intended to stop the spread of flame and smoke. However, fire-resistance-rated glazing also complies with an unexposed surface temperature limitation on the glazing. The test standards utilized to determine the fire-resistance rating, ASTM E119 / UL 263, limit the temperature rise on the unexposed side to 250°F average / 325°F individual point for the entire duration of the fire exposure. The standards utilized to determine the fire-protection rating on the fire door assembly, NFPA 252 / UL 10B / UL 10C, and on the sidelights and transom panels, NFPA 257 / UL 9, do not have a temperature limitation. As a result, the glazing gets hot!

Many studies have been conducted over years to quantity the level of radiant heat from fire-protection-rated glazing. The radiant heat from the glazing is significant enough to cause a fire on the other side of the fire-resistance-rated barrier. Three individual Test Reports /Data Packages analyzing the heat transfer and radiant heat from the glazing are described below:

1. The June 9, 2006 **Fire Tests of Building Construction and Materials w/ Radiation Reaction of Mannequins** evaluated three variations of ceramic fire-protection-rated glazing, 44 in wide by 77 in. tall in SAFTI*FIRST*'s EZ frame, installed in a masonry wall assembly. Fully clothed mannequins were placed 20 in. for each of the glazing panels. The mannequin's ignited at 9:06, 12:15 and 16:10 for the three glazing variations. This report is available at https://www.dropbox.com/scl/fi/2vuykq3n8ztk7zkr3sk84/Radiant-Heat-Test-Report.pdf?rlkey=lk6ehccg0kgqjdtvmu0ndrrjs&dl=0

2. The March 20, 2006 **O'Keeffe's Inc. – Glass Profile** data package is a more complete data package of the thermal imaging camera data for fire test described in the June 9, 2006 Report. The data shows the temperature on each of the three glazing materials exceeded 1000°F in approximately 10 min. This report is available at https://www.dropbox.com/scl/fi/8u23sxu4f35g5jjrt08vg/Infrared-Inspection-V2.pdf?rlkey=xa847sn3hnnhk7rji24x9siqc&dl=0

3. The May 13, 2016 **Report of Testing Ceramic Glass with Reference SAFTI FIRST EZ Frame for compliance with the applicable requirements of the following criteria: Modified UL 9, Standard for Safety, Fire Tests of Window Assemblies, 2009** evaluated one 43 in. wide by 77 in. tall ceramic glazing panel in SAFTI*FIRST*'s EZ frame, installed in a gypsum board wall assembly. The thermal imaging camera data for this fire test shows an average temperature of approximately 970°F at 10 min. In addition, this report also shows a radiant heat flux of approximately 24 KW/m^2 at a distance of 1.0 meter from the glazing, at 45 min into the fire exposure test. A generally accepted level of heat flux sufficient to ignite wood under a piloted and nonpiloted scenario is 12.5 and 29 kW / m^2. This report is available at https://www.dropbox.com/scl/fi/knhapos5u2w68bwx4s8ha/Final-Test-Report.pdf?rlkey=0zhuwqmn8e7iazg5c73b8oqea&dl=0

Looking at the current Table 716.1(2), all applications requiring a Minimum Fire Door and Fire Shutter Assembly Rating greater than 3/4 hr other than 1-1/2 hr fire-door assemblies in 2 hr exterior walls, limits the area of fire-protection-rated glazing in the door to 100 sq. in. In addition, all applications other than 1-1/2 hr fire door assemblies in exterior walls do not permit the use of fire-protection-rated glazing in side-lights or transoms regardless of size. As such, the change proposed herein brings consistency to the various applications covered in Table 716.1(2).

In addition to the changes required in Table 716.1(2), Section 716.2.5.4 is also being changed to be consistent with the changes in Table 716.1(2).

On the surface this proposal appears to have major consequences. However, the applications where this proposed change would have an impact is very limited. Based on Tables 601 and 705.5, the applications where this change would have an impact are as follows:

1. Exterior Bearing Walls in Types IB, IIIA, IIIB, IVB, IVC and IVHT types of construction

2. Exterior Nonbearing Walls with Fire Separation Distances < 5 ft in all types of construction in F-1, M and S-1 occupancies

3. Exterior Nonbearing Walls with Fire Separation Distances of 5 ≤ X < 10 ft in all IA and IVA types of construction in F-1, M and S-1 occupancies

4. Exterior Nonbearing Walls with Fire Separation Distances of 5 ≤ X < 10 ft in all types of construction other than IA and IVA in H occupancies

5. Exterior Nonbearing Walls with Fire Separation Distances of 10 ≤ X < 30 ft in IA, IB, IVA and IVB types of construction in H occupancies

The applications where this proposal truly has an impact is further reduced through the application of Table 705.8. This table permits a combination of protected and unprotected openings based on fire separation distance and the use of sprinklers.

Bibliography: Radiant Heat Flux https://guides.firedynamicstraining.ca/g/structural-firefighting-fundamentals-of-fire-and-combustion/118132

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

Estimated Immediate Cost Impact:

The average additional installed cost of fire-resistance-rated glazing as compared to fire-protection-rated glazing is approximately $60 to $85 / sq. ft, depending on the rating. However as stated in the Reason Statement, the applications where this proposed change would have an impact is very limited.

Estimated Immediate Cost Impact Justification (methodology and variables):

This includes average materials and labor costs for the above items. In the end, the exact increase in cost is based on the fire separation distance, the type of construction, the occupancy and the specific building design in question.

FS62-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed language is not necessary. The committee indicated that the proponent did not provide data to support the need for this code change (Vote: 9-3).

FS62-24

Individual Consideration Agenda

Comment 1:

Proponents: Richard Walke, Creative Technology Inc., SAFTIFIRST (richwalke61@gmail.com) requests As Submitted

Reason: This comment is asking that this proposal be approved as submitted (AS) for the reasons conveyed in the original Reason statement. The reports linked to that Reason statement provided data on the heat flux emitted from various types of fire-protection-rated glazing when exposed to an ASTM E119 / UL 263 time-temperature curve. These heat flux levels have the potential to ignite adjacent combustible construction as discussed below.

During the testimony at Committee Action Hearing #1, both supporters and opponents were asked by committee members if they were aware of actual fires where fire-protection-rated glazing stayed in place yet there was ignition of an adjacent structure. The answer from both sides was no. I have subsequently spent hours searching the web for fire incident reports documenting the performance of fire-protection-rated or fire-resistance-rated glazing in fire doors and side-light / transom panels in exterior walls. I was unable to locate any data which drilled down to that level of detail. As such, I don't believe we will be able to answer that question in a definitive manner either way.

Testimony at Committee Action Hearing #1 supported the theoretical position that radiant heat from fire-protection-rated glazing has the potential for igniting adjacent buildings. The potential of a fire to ignite adjacent buildings is dependent on a number of factors, including the construction of the adjacent building, the fire separation distance, the intensity of the fire, and the type of glazing used in fire doors and side-light / transom panels. These factors will dictate the heat flux seen by the adjacent construction. The heat flux level required for autoignition of wood is generally agreed to be approximately 12.5 kW/m2 for an exposure time of approximately 10 to 20 minutes.1 Based on the Reports referenced in the original Reason statement, the radiant heat through fire-protection-rated glazing certainly has the potential to ignite the adjacent construction.

As stated in the original Reason statement, this proposal, if approved, will impact only a very limited number of buildings. The original Reason statement detailed the impacted Types of Construction and Occupancies based on the fire separation distance. Beyond those limitations, Table 705.9 further limits the need for protected openings to fire separation distances of less than 3 ft for sprinklered and nonsprinklered applications, and 3 ft to less than 5 ft for nonsprinklered applications. Exterior walls with larger fire separation distances are permitted some percentage of unprotected openings.

Bibliography: [1] Journal of Fire Protection Engineering, August, 2002 - Ignition of Wood, A Review of the State of the Art, by Vytenis Babrauskas, Ph.D.

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

Comment (CAH2)# 438

FS63-24

IBC: TABLE 716.1(2), TABLE 716.1(3)

Proposed Change as Submitted

Proponents: Richard Walke, Creative Technology Inc., SAFTIFIRST (richwalke61@gmail.com)

2024 International Building Code

Revise as follows:

TABLE 716.1(2) ~~OPENING~~ FIRE DOOR ASSEMBLY ~~PROTECTION ASSEMBLIES,~~ RATINGS AND FIRE-RATED GLAZING MARKINGS [a]

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[~~a~~ b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL [~~b~~, c, d]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4		3	See Note ~~a~~ b	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[~~d~~ e]	See Note ~~a~~ b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1\frac{1}{2}$		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	$1\frac{1}{2}$	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours) [~~e~~ f]	Each wall of the double-wall assembly (hours) [f g]			—				
	4	3	3	See Note ~~a~~ b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	$1\frac{1}{2}$	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps~~.~~		2	$1\frac{1}{2}$	100 sq. in.[~~b~~ c]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire walls[~~f~~ h]	4		3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[~~d~~ e]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1		1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.=D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
						Fire protection			
Other fire barriers	1		$\frac{3}{4}$	Maximum size tested	D-H-45	$\frac{3}{4}$ [~~h~~ i]		D-H-45[~~h~~ i]	
Fire partitions: Corridor walls	1		$\frac{1}{3}$ [~~a~~ b]	Maximum size tested	D-20	$\frac{3}{4}$ [~~a~~ b]		D-H-OH-45	
	0.5		$\frac{1}{3}$ [~~a~~ b]	Maximum size tested	D-20	$\frac{1}{3}$		D-H-OH-20	
Other fire partitions	1		$\frac{3}{4}$ [~~i~~ j]	Maximum size tested	D-H-45	$\frac{3}{4}$		D-H-45	
	0.5		$\frac{1}{3}$	Maximum size tested	D-H-20	$\frac{1}{3}$		D-H-20	
Exterior walls	3		$1\frac{1}{2}$	100 sq. in.[~~e~~ b]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	Maximum size tested	D-H 90 or D-H-W-90	$1\frac{1}{2}$ [~~h~~ i]	2	D-H-OH-90 [~~h~~ i]	W-120
						Fire protection			

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE-RATED GLAZING MARKING DOOR VISION PANEL	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
	1	3/4	Maximum size tested	D-H-45	3/4 hi		D-H-45 hi	
Smoke barriers					Fire protection			
	1	1/3	Maximum size tested	D-20	3/4		D-H-OH-45	

For SI: 1 square inch = 645.2 mm.

a. Where required, glazing shall also comply with the safety glazing requirements and identification specified in Section 716.1.2.1.

~~a~~ b. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.

~~b~~ c. Under the column heading “Fire-rated glazing marking door vision panel,” W refers to the fire-resistance rating of the glazing, not the frame.

~~c~~ d. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.

~~d~~ e. Two doors, each with a fire protection rating of $1\frac{1}{2}$ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

~~e~~ f. As required in Section 706.4.

~~f~~ g. As allowed in Section 4.6 of NFPA 221.

~~g~~ h. See Section 716.2.5.1.2.

~~h~~ i. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

~~i~~ j. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

TABLE 716.1(3) FIRE WINDOW ASSEMBLY ~~FIRE PROTECTION~~ RATINGS AND FIRE-RATED GLAZING MARKINGS [a]

TYPE OF WALL ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)	FIRE-RATED GLAZING MARKING
Interior walls			
Fire walls	All	NP [ab]	W-XXX [bc]
Fire barriers	>1	NP [ab]	W-XXX [bc]
	1	NP [ab]	W-XXX [bc]
Atrium separations (Section 707.3.6), Incidental use areas (Section 707.3.7), [ed] Mixed occupancy separations (Section 707.3.9)	1	3/4	OH-45 or W-60
Fire partitions	1	3/4	OH-45 or W-60
	0.5	1/3	OH-20 or W-30
Smoke barriers	1	3/4	OH-45 or W-60
Exterior walls	>1	$1\frac{1}{2}$	OH-90 or W-XXX [bc]
	1	3/4	OH-45 or W-60
	0.5	1/3	OH-20 or W-30

TYPE OF WALL ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)	FIRE-RATED GLAZING MARKING
Party wall	All	NP	Not Applicable

NP = Not Permitted.

a. Where required, glazing shall also comply with the safety glazing requirements and identification specified in Section 716.1.2.1.

~~a~~ b. Not permitted except fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3.

~~b~~ c. XXX = The fire rating duration period in minutes, which shall be equal to the fire-resistance rating required for the wall assembly.

~~c~~ d. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 orUL 263, as specified in Section 716.1.2.3, shall be permitted.

Reason: This proposal is intended to ensure code users are aware that glazing in or around door assemblies and in fire window assemblies is in most cases required to meet the safety glazing requirements of Chapter 24. The new footnote a to Tables 716.1(2) and 716.1(3) points the code users to Section 716.1.2.1, which in turn points the code readers to Chapter 24. Within Chapter 24, Section 2406 covers the requirements for safety glazing including the marking requirements.

The identification of all subsequent footnotes has been shifted one character as a result of the new Footnote a.

In addition to the new footnote, the titles of Tables 716.1(2) and 716.1(3) have been changed to more accurately reflect the information conveyed in the tables.

It is believed this new footnote a will help ensure the proper glazing is used in applications requiring safety glazing.

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

Justification for no cost impact:

The proposed changes simply clarify the existing requirements.

FS63-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed language is not necessary and already addressed in the code (Vote: 9-3).

FS63-24

Individual Consideration Agenda

Comment 1:

IBC: TABLE 716.1(2), TABLE 716.1(3)

Proponents: Richard Walke, Creative Technology Inc., SAFTIFIRST (richwalke61@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

TABLE 716.1(2) FIRE DOOR ASSEMBLY RATINGS AND FIRE-RATED GLAZING MARKINGS [a]

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[c, d]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4		3	See Note b	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[e]	See Note b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1\frac{1}{2}$		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	$1\frac{1}{2}$	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours)[f]	Each wall of the double-wall assembly (hours)[g]			—				
	4	3	3	See Note b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	$1\frac{1}{2}$	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps	2		$1\frac{1}{2}$	100 sq. in.[c]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire walls[h]	4		3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[e]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1		1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.=D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
						Fire protection			
Other fire barriers	1		$\frac{3}{4}$	Maximum size tested	D-H-45	$\frac{3}{4}$[i]		D-H-45[i]	
Fire partitions: Corridor walls	1		$\frac{1}{3}$[b]	Maximum size tested	D-20	$\frac{3}{4}$[b]		D-H-OH-45	
	0.5		$\frac{1}{3}$[b]	Maximum size tested	D-20	$\frac{1}{3}$		D-H-OH-20	
Other fire partitions	1		$\frac{3}{4}$[j]	Maximum size tested	D-H-45	$\frac{3}{4}$		D-H-45	
	0.5		$\frac{1}{3}$	Maximum size tested	D-H-20	$\frac{1}{3}$		D-H-20	
Exterior walls	3		$1\frac{1}{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	Maximum size tested	D-H 90 or D-H-W-90	$1\frac{1}{2}$[i]	2	D-H-OH-90[i]	W-120
						Fire protection			
	1		$\frac{3}{4}$	Maximum size tested	D-H-45	$\frac{3}{4}$[i]		D-H-45[i]	
Smoke barriers						**Fire protection**			
	1		$\frac{1}{3}$	Maximum size tested	D-20	$\frac{3}{4}$		D-H-OH-45	

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE-RATED GLAZING MARKING DOOR VISION PANEL	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance

For SI: 1 square inch = 645.2 mm.

a. ~~Where required, glazing~~ Glazing shall also comply with the safety glazing requirements and identification specified in ~~Section 716.1.2.1~~ Chapter 24 where applicable.

b. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.

c. Under the column heading “Fire-rated glazing marking door vision panel,” W refers to the fire-resistance rating of the glazing, not the frame.

d. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.

e. Two doors, each with a fire protection rating of $1\,^1/_2$ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

f. As required in Section 706.4.

g. As allowed in Section 4.6 of NFPA 221.

h. See Section 716.2.5.1.2.

i. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

j. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

TABLE 716.1(3) FIRE WINDOW ASSEMBLY RATINGS AND FIRE-RATED GLAZING MARKINGS [a]

TYPE OF WALL ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)	FIRE-RATED GLAZING MARKING
Interior walls			
Fire walls	All	NP[b]	W-XXX[c]
Fire barriers	>1	NP[b]	W-XXX[c]
	1	NP[b]	W-XXX[c]
Atrium separations (Section 707.3.6), Incidental use areas (Section 707.3.7),[d] Mixed occupancy separations (Section 707.3.9)	1	$^3/_4$	OH-45 or W-60
Fire partitions	1	$^3/_4$	OH-45 or W-60
	0.5	$^1/_3$	OH-20 or W-30
Smoke barriers	1	$^3/_4$	OH-45 or W-60
Exterior walls	>1	$1\,^1/_2$	OH-90 or W-XXX[c]
	1	$^3/_4$	OH-45 or W-60
	0.5	$^1/_3$	OH-20 or W-30
Party wall	All	NP	Not Applicable

NP = Not Permitted.

a. ~~Where required, glazing~~Glazing shall also comply with the safety glazing requirements and identification specified in ~~Section 716.1.2.1~~ Chapter 24 where applicable.

b. Not permitted except fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3.

c. XXX = The fire rating duration period in minutes, which shall be equal to the fire-resistance rating required for the wall assembly.

d. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 orUL 263, as specified in Section 716.1.2.3, shall be permitted.

Reason: This proposal is intended to ensure code users are aware that glazing in or around fire door assemblies and in fire window assemblies is in most cases required to meet the safety glazing requirements of Chapter 24 of the IBC. The new footnote a to Tables 716.1(2) and 716.1(3) points the code users to the requirements for safety glazing including the marking requirements.

The identification of all subsequent footnotes has been shifted one character as a result of the new Footnote a.

In addition to the new footnote, the titles of Tables 716.1(2) and 716.1(3) have been changed to more accurately reflect the information conveyed in the tables.

Since the Committee Action Hearing, one change has been made to this proposed footnote. The footnote now points directly to Chapter 24 where the specific requirements are found, instead of Section 716.2.1.

During Committee Action Hearing #1, opposition stated the safety glazing requirements are already contained in Section 716.1.2.1. While that is true, the dynamics relating to the use of Tables 716.1(2) and 716.1(3) have changed as a result of the expansion of these tables which occurred with the 2012 IBC. Realistically, these tables have become primary reference in Section 716 for enforcing the code. One of the few required elements missing in the Tables is a reference to the safety glazing requirements. As such, this proposal adds a pointer to the safety glazing requirements through a new Footnote a. Opposition also stated everyone already knows the IBC contains safety glazing requirements. As such, this footnote is not needed. Unfortunately, “everyone” does not already know this. There are new design professionals, contractors and code officials entering the construction field on a regular basis. They may not be aware of these requirements. If we can prevent one serious injury by adding one short footnote to each of these tables, it is worth the effort.

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

Justification for no cost impact:

The proposed changes simply clarify the existing requirements.

Comment (CAH2)# 453

FS65-24

IBC: 716.2.6.1

Proposed Change as Submitted

Proponents: Jeff O'Neil, Chair, Committee on Healthcare (ahc@iccsafe.org)

2024 International Building Code

Revise as follows:

716.2.6.1 Door closing. *Fire doors* shall be latching and self- or automatic-closing in accordance with this section. **Exceptions:**

1. *Fire doors* located in common walls separating *dwelling units* or *sleeping units* in Group R-1 shall be permitted without automatic- or *self-closing* devices.
2. Fire doors located in corridors and serving sleeping rooms in Group I-1, Condition 2 shall be permitted without automatic- or self-closing devices.
3 ~~2~~. The elevator car doors and the associated elevator hoistway doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation.
4 ~~3~~. Fire doors required solely for compliance with ICC 500 shall not be required to be *self-closing* or automatic-closing.

Reason: Nursing homes (Group I-2, Condition 2) are not required to have self-closing or automatic-closing corridor doors. This is due to the facilities having smoke compartments to subdivide care recipient sleeping areas, the building being fully sprinklered, and staff trained in fire and safety evacuation plans. Assisted living (Group I-1, Condition 2) are also required to have smoke compartments, the building to be fully sprinklered and the staff trained in fire and safety evacuation plans. In Assisted living (Group I-1, Condition 2), residents, while slower, are required to be capable of self preservation. In these facilities, it is beneficial to allow for door to be open to improved supervision and to increase social interaction - both of which shown to improve the environment and comfort of care recipients.

Care recipients in Assisted Living (I-1, Condition 2) facilities quite often use mobility devices and/or have balance and gait issues that take them longer to move through door openings. Additionally, I-1, Condition 2 Assisted Living care recipients are often frail and quite often struggle to have enough strength to open doors with automatic closers. It is a constant challenge to adjust closers to be able to reduce the amount of force needed to open the door, plus keep it open long enough for occupants to move through the opening, and then create enough force for the door to close and latch properly. Often, the last bit of the door swing closes fast to provide the proper latching, but then the door often hits the care recipient causing injury or even knocking them over.

The intent of this proposal is to allow for Group I-1, Condition 2 facilities to not require self-closing or automatic-closing corridor doors. The Healthcare committee feels that this will improve patient safety on a daily basis. There is a good balance of passive and active fire protection that will still be in place, and the fire and safety plans can include closing doors.

This is not intended to allow for the removal of self-closers or automatic-closers on the fire barriers around stairways or on the cross-corridor doors for smoke compartment.

This proposal is submitted by the ICC Committee for Healthcare (CHC).
The Committee on Healthcare (CHC) was established by the ICC Board of Directors in 2011 to pursue opportunities to study and develop effective and efficient provisions for Hospital, Nursing Homes, Assisted Living and Ambulatory Care Facilities. This committee was formed in cooperation with the American Society for Healthcare Engineering (ASHE). In July of 2017, the ICC Board made CHC a standing committee. In 2023 the CHC has held several virtual meetings open to any interested party. In addition, there were numerous virtual Working Group meetings for the current code development cycle, which included members of the committee as well as interested parties. Related documents and reports are posted on the CHC website at CHC webpage.

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

Estimated Immediate Cost Impact:

The average cost of door closers, not including the cost of labor for installation, ranges from $150 to $600 dollars. The total decrease would depend on the number of sleeping room doors in the facility.

Estimated Immediate Cost Impact Justification (methodology and variables):

If a designer chooses to utilize this exception, closers would not be required on corridor doors.

FS65-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed language is confusing on the location of the fire door. The committee mentioned that the assumption is that the building is sprinkled. The committee disagreed that smoke compartments are the same in Nursing homes vs Assisted living (Vote: 10-2).

FS65-24

Individual Consideration Agenda

Comment 1:

IBC: 716.2.6.1

Proponents: Jeff O'Neil, Chair, Committee on Healthcare (ahc@iccsafe.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

716.2.6.1 Door closing. *Fire doors* shall be latching and self- or automatic-closing in accordance with this section. **Exceptions:**

1. *Fire doors* located in common walls separating *dwelling units* or *sleeping units* in Group R-1 shall be permitted without automatic- or *self-closing* devices.
2. In Group I-1, Condition 2, fire ~~Fire~~ doors located in corridors and serving sleeping ~~rooms~~ units that do not include a cooktop or range ~~in Group I-1, Condition 2~~ shall be permitted without automatic- or self-closing devices.
3. The elevator car doors and the associated elevator hoistway doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation.
4. Fire doors required solely for compliance with ICC 500 shall not be required to be *self-closing* or automatic-closing.

Reason: First, it is important to note that Group I-1, Condition 2 facilities require the residents to be capable of self-preservation with limited limited verbal or physical assistance (Section 308.2.2). This is defined as following: [BG]LIMITED VERBAL OR PHYSICAL ASSISTANCE. Describes persons who, because of age, physical limitations, cognitive limitations, treatment or chemical dependency, may not independently recognize, respond or evacuate without limited verbal or physical assistance during an emergency situation. Limited verbal assistance includes prompting, giving and repeating instructions. Limited physical assistance includes assistance with transfers to walking aids or mobility devices and assistance with egress. The committee expressed concern about the staffing to resident

ratio for assisted living. The following active and passive fire protection requirements are applicable for Group I-1, Condition 2: 1.
1 hour rated corridors (Table 1020.2)
2. Separation between units (Section 420.2, 420.3, 708, 711)
3. Smoke compartments (Section 420.6, 709)
4. NFPA 13 Sprinkler system (Section 420.4, 903.2.6)
5. Fire alarms and smoke detection systems; immediate notification of residents and some units with visible alarms (Section 420.5, 907.2.6, 907.2.6.1, 907.5.2.3.2)
6. Smoke alarms in the units (Section 420.5, 907.2.6.1.1, 907.2.11)
7. Common cooking areas limited the same as Group I-2, Condition 2 (Section 420.7)
So a Group I-1, Condition 2 will have rated corridors and rated doors on the sleeping unit doors, in addition to the smoke compartments. Nursing homes have smoke compartments, but not rated corridors, rated unit doors or separation of units. In addition, Group I-1, Condition 2 have smoke alarms in the units, which nursing homes do not require. This exception to remove closers is limited to the rated entrance doors to sleeping units, not other rooms and spaces in the facility. A person using a walker or crutches does not have an extra hand to hold open a door with a closer. Person's using canes or walkers tend to move slower through a door. Closers are difficult for these individuals to deal with. Many people have been injured attempting to move into and out of their sleeping units. The extra passive fire protections systems in place in an assisted living facility should provided a reasonable level of safety to balance the removal of the closers in these limited situations. The definition for sleeping unit states that sleeping units can include kitchen facilities. **[A] SLEEPING UNIT.** A single unit that provides rooms or spaces for one or more persons, includes permanent provisions for sleeping and can include provisions for living, eating and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units. In assisted living facilities, almost all the cooking is in a central location. Units might have microwaves, sinks and refrigerators, but not cooktops or ovens. Most fires in residences (apartments or homes) start in the kitchen. Therefore, we are also suggesting that sleeping units with full kitchens cannot use this exception. The doors and corridors will still be rated, so it doors are closed, this passive protection is still in place. It is our opinion that the additional passive and active fire protections required will balance with the need to for resident safety as they move in and out of their unit. Below are pictures illustrating people with crutches and walkers moving through doors
.

We were able to find some statistics for falls related to persons over 65 and Assisted Living Facilities.

Most Impactful Statistics on Falls and Fires in Assisted Living Facilities Injuries Due to Falls in Assisted Living Facilities CDC Data on Older Adult Falls (2018):- Prevalence: Falls are the leading cause of injury among adults aged 65 and older.- Incidence: 27.5% of older adults reported falling at least once in the past year, and 10.2% reported a fall-related injury.- Impact: In 2018, there were approximately 35.6 million falls and 8.4 million fall-related injuries among older adults.- Risk Factors: Older adults with difficulties in functional abilities (e.g., walking, climbing stairs, dressing) reported higher percentages of falls and fall-related injuries.- Geographic Variability: A higher percentage of older adults living in rural areas reported falls compared to those in urban areas.- STEADI Initiative: Focuses on providing healthcare providers with tools and resources to screen, assess, and intervene to reduce fall risk. It emphasizes the importance of clinical fall prevention programs and offers training and materials to support healthcare providers.

AHCA/NCAL Data on Falls in Assisted Living Facilities:- Annual Statistics: Each year, there are over 37 million falls among older adults, with 9 million resulting in injuries, 3 million in emergency department visits, 1 million in hospitalizations, and 36,000 deaths.- Screening and Prevention: The CDC Foundation launched a toolkit that includes Falls Free Check-ups aimed at preventing falls and fall-related injuries by developing and implementing risk factor prevention programs.

Additional Data:- SafelyYou Report: Assisted living communities report an average of 260 resident falls per year.- Impact on Care Levels: Approximately 24% of falls in assisted living result in moving residents to an increased level of care.- Quality of Care: Falls can impact staffing, quality of care, and consistency of care in senior living communities.- Economic Impact: The average cost of assisted living liability claims related to falls is $267,000 per claim.

The Inaugural 2022 State of Falls Report:- Prevalence: About 36 million people aged 65 and older experience a fall each year.- Economic Impact: $50 billion spent on medical costs related to non-fatal fall injuries annually.- Emotional Impact: Nearly half (45%) of American adults over 42 have experienced a fall in the past five years. Emotions following a fall include embarrassment/shame (44%), anxiety (43%), and fear about getting older (28%).- Move-Outs Due to Falls : 1 in 7 move-outs in assisted living communities are related to falls.

CDC Fall-Related Data:- Leading Cause of Injury: Falls are the leading cause of injury for adults aged 65 years and older.- Incidence: Over 14 million older adults report falling each year.- Injuries from Falls: About 37% of those who fall report an injury requiring medical treatment or restricting activity for at least one day, resulting in an estimated nine million fall injuries annually.- State Variability: Falls are common across all states but show variability.- Fall Deaths: Falls are the leading cause of injury-related death among adults 65 and older, with the age-adjusted fall death rate increasing by 41% from 2012 to 2021.

Fires in Sprinklered Assisted Living Facilities NFPA Report on Sprinklers:- Effectiveness: Sprinklers are highly effective in controlling fires. From 2017 to 2021, sprinklers operated in 92% of reported structure fires and were effective in 97% of those cases.- Impact on Fire Spread: In properties with sprinklers, 94% of fires were confined to the object or room of origin, compared to 70% in properties without automatic extinguishing systems (AES).- Injury and Death Reduction: Civilian fire death rates were 90% lower, and civilian injury rates were 32% lower in properties with sprinklers compared to those without.- Firefighter Safety: The rate of firefighter injuries per fire was 35% lower in properties with sprinklers.

AHCA/NCAL on Sprinklers:- Compliance Issues: Common issues include obstructions near sprinkler heads, improper attachments to sprinkler piping, and lack of proper maintenance and inspection.- Maintenance: Regular testing, inspection, and cleaning of sprinkler heads are crucial to ensure they operate effectively during a fire.- Training: Proper training for staff on how to maintain and inspect sprinkler systems is essential for compliance and safety.

General NFPA Data:- Residential Properties: In residential properties, sprinklers are present in only 8% of fires but are highly effective in controlling fire spread and reducing casualties and property damage.- Multiple-Death Fires: There has never been a multiple-death fire in a nursing home with a functional automatic sprinkler system.

Fire Systems Data:- Annual Response: Fire departments in the US respond to more than 1,800 fires within residential board and care facilities annually, including senior housing facilities.- Fire Containment: 88% of these fires do not spread beyond the area of origin due to stringent code requirements for fully functional fire sprinkler and detection systems.- Case Example: At the Victory Centre of Park Forest in Illinois, a single fire sprinkler controlled a fire started by an unattended stovetop. The resident was unharmed, and no other apartments were damaged.- Fire Impact: The majority of fires in assisted living facilities are confined fires that typically do not result in serious injury or property damage.

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2. [Falls Screening and Prevention in Assisted Living - AHCA/NCAL](https://www.ahcancal.org/News-and-Communications/Blog/Pages/Falls-Screening-and-Prevention-in-Assisted-Living.aspx)

3. [The State of Falls In Senior Living: New Report, New Data](https://seniorhousingnews.com/2022/11/15/the-state-of-falls-in-senior-living-new-report-new-data/)
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11. [Steps to Safety program for older adults | NFPA](https://www.nfpa.org/Education-and-Research/Home-Fire-Safety/Older-adults/Steps-to-Safety)
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14. [Fire loss in the United States | NFPA Research](https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/fire-loss-in-the-united-states)
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Cost Impact: Decrease

Estimated Immediate Cost Impact:

The average cost of door closers, not including the cost of labor for installation, ranges from $150 to $600 dollars. The total decrease would depend on the number of sleeping room doors in the facility.

Estimated Immediate Cost Impact Justification (methodology and variables):

If a designer chooses to utilize this exception, closers would not be required on corridor doors.

FS67-24

IBC: 716.4, 716.4.1, 716.4.2, 716.4.3, TABLE 716.1(2), 716.4 (New), 716.4.1 (New), 716.4.2 (New), 716.4.2.1 (New), 716.4.2.2 (New), 716.4.2.3 (New), 716.4.3 (New), 716.4.4 (New)

Proposed Change as Submitted

Proponents: Paul Armstrong, McKEON (paul@7arms.com); Doug Zachary, McKEON, McKEON (dzachary@mckeondoor.com); David Dodge, McKEON (ddodge@mckeondoor.com)

2024 International Building Code

Delete without substitution:

~~**716.4 Fire protective curtain assembly.** *Approved fire protective curtain assemblies* shall be constructed of any materials or assembly of component materials tested without hose stream in accordance with UL 10D, and shall comply with the Sections 716.4.1 through 716.4.3.~~

~~**716.4.1 Label.** *Fire protective curtain assemblies* used as opening protectives in fire-rated walls and *smoke partitions* shall be*labeled* in accordance with Section 716.2.9.~~

~~**716.4.2 Smoke and draft control.** *Fire protective curtain assemblies* used to protect openings where smoke and draft control assemblies are required shall comply with Section 716.2.1.4.~~

~~**716.4.3 Installation.** *Fire protective curtain assemblies* shall be installed in accordance with NFPA 80.~~

Revise as follows:

TABLE 716.1(2) OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

Portions of table not shown remain unchanged.

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[a]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[b, c]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4		3	See Note a	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1\frac{1}{2}$		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	$1\frac{1}{2}$	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours)[e]	Each wall of the double-wall assembly (hours)[f]			—				
	4	3	3	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	$1\frac{1}{2}$	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps.	2		$1\frac{1}{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE-RATED GLAZING MARKING DOOR VISION PANEL	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Horizontal exits in fire walls[g]	4	3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[d]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1	1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.=D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
					Fire protection			
Other fire barriers	1	3/4	Maximum size tested	D-H-45	3/4[h]		D-H-45[h]	
Fire partitions: Corridor walls	1	1/3[a,i]	Maximum size tested	D-20	3/4[a]		D-H-OH-45	
	0.5	1/3[a,i]	Maximum size tested	D-20	1/3		D-H-OH-20	
Other fire partitions	1	3/4[i]	Maximum size tested	D-H-45	3/4		D-H-45	
	0.5	1/3	Maximum size tested	D-H-20	1/3		D-H-20	
Exterior walls	3	1 1/2	100 sq. in.[a]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2	1 1/2	Maximum size tested	D-H 90 or D-H-W-90	1 1/2[h]	2	D-H-OH-90[h]	W-120
					Fire protection			
	1	3/4	Maximum size tested	D-H-45	3/4[h]		D-H-45[h]	
Smoke barriers					Fire protection			
	1	1/3[i]	Maximum size tested	D-20	3/4		D-H-OH-45	

For SI: 1 square inch = 645.2 mm.

a. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.

b. Under the column heading “Fire-rated glazing marking door vision panel,” W refers to the fire-resistance rating of the glazing, not the frame.

c. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.

d. Two doors, each with a fire protection rating of 1 1/2 hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

e. As required in Section 706.4.

f. As allowed in Section 4.6 of NFPA 221.

g. See Section 716.2.5.1.2.

h. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

i. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

j. *Fire protective curtain assemblies* in accordance with Section 716.4 shall be deemed equivalent in *fire protection rating* to 20-minute fire doors in *fire-resistance rated corridor* walls and *smoke barrier* walls.

Add new text as follows:

716.4 Fire protective curtain assemblies in corridors and smoke barriers. *Fire protective curtain assemblies* shall have a minimum *fire protection rating* of 20 minutes without the hose stream test where located in *corridor* walls and *smoke barrier* walls having a *fire-resistance rating* in accordance with Table 716.1(2) and shall comply with the provisions of this section.

716.4.1 Testing requirements. Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials that conforms to the following test requirements:

1. Fire protective curtain assemblies shall be tested without hose stream in accordance with UL 10D.
2. Fire protective curtain assemblies shall comply with the smoke and draft control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784.

716.4.2 Labeled protective assemblies. *Fire protective curtain assemblies* shall be labeled by an *approved agency*. The *labels* shall comply with NFPA 80, and shall be permanently affixed to the bottom bar.

716.4.2.1 Fire protective curtain assembly labeling requirements. *Fire protective curtain assemblies* shall be *labeled* showing the name of the manufacturer or other identification readily traceable back to the manufacturer, the name or trademark of the third-party inspection agency and the *fire protection rating*. Smoke and draft control assemblies complying with UL 1784 shall be *labeled* as such and shall comply with Section 716.4.2.3. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.

716.4.2.2 Oversized assemblies. Oversized fire protective curtain assemblies shall bear an oversized label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. Where a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the fire protective curtain assembly conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.

716.4.2.3 Smoke and draft control assembly labeling requirements. Smoke and draft control assemblies complying with UL 1784 shall be labeled in accordance with Section 716.4.2.1 and shall show the letter “S” on the fire-rating label of the assembly.

716.4.3 Installation. *Installation of fire protective curtain assemblies* in corridors and smoke barriers shall be in accordance with NFPA 105.

716.4.4 Means of egress. *Fire protective curtain assemblies* shall not be used as required *means of egress* doors in accordance with Section 1010.

Reason: The fire protective curtain assembly definition in Section 202 and the UL 10D test standard in Section 716.4 have been recognized by the IBC since they were added in the 2021 code cycle. However, the full inclusion of these opening protectives in the IBC is incomplete as there is no mention of fire protective curtain assemblies in Table 716.1(2) nor are there any references to Section 716.4 anywhere in the code. This code change connects those missing links and assigns fire protective curtain assemblies to their rightful place in the IBC.

UL 10D test criteria is essentially the same positive pressure fire endurance test criteria in UL 10C, but without the requirement for a hose stream integrity test at the end of the burn. Therefore, our current codes will only allow the use of UL 10D tested products where fire door assemblies are not required to meet hose stream performance. This condition only occurs in Section 716.2.2.1:

716.2.2.1 Door assemblies in corridors and smoke barriers.

Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in corridor walls or smoke barrier walls having a fire-resistance rating in accordance with Table 716.1(2) shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test.

There were attempts in the 2024 code cycle to add the UL 10D test standard to Section 716.2.2.1. But these attempts were disapproved largely because it was determined that this section is not the correct location since Section 716.2 covers fire door assemblies and Section 716.2.2.1 specifically refers to Table 716.1(2) which does not currently contain a reference to fire protective curtain assemblies. Based on that feedback, this code change accomplishes the following:

First, since fire protective curtain assemblies are a separate category of opening protective in Section 716.4, they cannot simply be placed under the requirements for fire door assemblies in Section 716.2. The only place fire protective curtain assemblies and fire door assemblies can be linked is through Table 716.1(2), which encompasses opening protectives of all types. Actually adding fire protective curtain assemblies within Table 716.1(2) is a complex task and unnecessary due to the limited applications that a UL 10D tested product can be legitimately placed. The simpler and more effective approach is to add the proposed footnote “j.” to Table 716.1(2) where Section 716.4 is now referenced. This proposed note, in accordance with the applications described in Section 716.2.2.1, will only be applied to the minimum fire door and fire shutter assembly ratings for “Fire partitions: Corridor Walls” and “Smoke Barriers”.

Next, Section 716.4 requires a complete rewrite in order to align it specifically with these applications. Since fire protective curtain assemblies are only deemed equivalent in fire protection rating to 20 minute fire doors in fire-resistance rated corridor walls and smoke barrier walls, Section 716.4 is rewritten to include similar language and layout found in Section 716.2.2.1. Furthermore, the subsections have been reformatted to create consistency in the layout with fire door assemblies and fire window assemblies in Sections 716.2 and 716.3, respectively.

The fire testing requirements for fire protective curtain assemblies in corridors and smoke barriers remains unchanged from the previous edition of the IBC. Additionally, these assemblies shall also serve as smoke and draft control assemblies meeting the criteria for air leakage for fire door assemblies in corridors and smoke barriers in Section 716.2.2.1.1 and being tested in accordance UL 1784.

Labeling requirements for fire protective curtain assemblies in the previous edition of the code referred back to labeling requirements for fire door assemblies in Section 716.2.9 which do not all apply to these types of opening protectives. Fire protective curtain assemblies have their own dedicated chapter in NFPA 80 and have been recognized as a separate and distinct category of opening protective by the IBC. This code change acknowledges the labeling requirements specific to fire protective curtain assemblies and has been structured in a format that is consistent with fire door assemblies.

Installation of all rated opening protectives must comply with NFPA 80 as required by Section 716.1. It is redundant and unnecessary to repeat this requirement in Section 716.4 so it has been removed in this code change. However, it is necessary to require fire protective curtain assemblies in corridors and smoke barriers to additionally be installed in accordance with NFPA 105 because of the smoke and draft control requirements. These installation requirements are consistent with fire door assemblies in the same applications as required by Section 716.2.10.

Finally, this code change confirms these products shall not be used as required means of egress doors. Fire protective curtain assemblies currently available in the market include many different features or options to travel through the opening protectives. These options include swinging flaps, grab straps, pass-through slots, push-to-open buttons and delayed deployment. None of these options that currently exist in fire protective curtain assemblies comply with means of egress doors in Section 1010.

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

Justification for no cost impact:

This proposal recognizes the current practice of testing and use of these assemblies.

FS67-24

Public Hearing Results (CAH1)

Errata: This proposal includes unpublished errata **See below requirement #2 correct text:716.4.1 Testing requirements.** Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials that conforms to the following test requirements:

1. Fire protective curtain assemblies shall be tested without hose stream in accordance with UL 10D.
2. ~~Fire protective curtain assemblies shall be tested without hose stream in accordance with UL 10D.~~ Fire protective curtain assembl control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784.

Committee Action: **Disapproved**

Committee Reason: The committee determined that the proposed language is confusing between the sections indicated in the code proposal. The committee has an issue with the means of egress portion of the proposal. The committee has an issue with the table footnote and mentioned that the text needs to be revised from "deemed equivalent" to "the same test" (Vote: 12-0).

FS67-24

Individual Consideration Agenda

Comment 1:

IBC: TABLE 716.1(2), 716.4, 716.4.1, 716.4.2, 716.4.2.1, 716.4.2.2, 716.4.2.3, 716.4.3, 716.4.4

Proponents: Paul Armstrong, McKEON; Doug Zachary, McKEON (dzachary@mckeondoor.com); David Dodge, McKeon Door Company, McKEON (ddodge@mckeondoor.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

TABLE 716.1(2) OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[a]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[b, c]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4	3	See Note a	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[d]	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE-RATED GLAZING MARKING DOOR VISION PANEL	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance
	2		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1\frac{1}{2}$		$1\frac{1}{2}$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	$1\frac{1}{2}$	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours)[e]	Each wall of the double-wall assembly (hours)[f]			—				
	4	3	3	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	$1\frac{1}{2}$	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps.	2		$1\frac{1}{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire walls[g]	4		3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.=D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1		1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.=D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
						Fire protection			
Other fire barriers	1		$\frac{3}{4}$	Maximum size tested	D-H-45	$\frac{3}{4}$[h]		D-H-45[h]	
Fire partitions: Corridor walls	1		$\frac{1}{3}$[a,j]	Maximum size tested	D-20	$\frac{3}{4}$[a]		D-H-OH-45	
	0.5		$\frac{1}{3}$[a,j]	Maximum size tested	D-20	$\frac{1}{3}$		D-H-OH-20	
Other fire partitions	1		$\frac{3}{4}$[i]	Maximum size tested	D-H-45	$\frac{3}{4}$		D-H-45	
	0.5		$\frac{1}{3}$	Maximum size tested	D-H-20	$\frac{1}{3}$		D-H-20	
Exterior walls	3		$1\frac{1}{2}$	100 sq. in.[a]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2		$1\frac{1}{2}$	Maximum size tested	D-H 90 or D-H-W-90	$1\frac{1}{2}$[h]	2	D-H-OH-90[h]	W-120
						Fire protection			
	1		$\frac{3}{4}$	Maximum size tested	D-H-45	$\frac{3}{4}$[h]		D-H-45[h]	
Smoke barriers						Fire protection			
	1		$\frac{1}{3}$[j]	Maximum size tested	D-20	$\frac{3}{4}$		D-H-OH-45	

For SI: 1 square inch = 645.2 mm.

a. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.

b. Under the column heading “Fire-rated glazing marking door vision panel,” W refers to the fire-resistance rating of the glazing, not the frame.

c. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.

d. Two doors, each with a fire protection rating of $1\frac{1}{2}$ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

e. As required in Section 706.4.

f. As allowed in Section 4.6 of NFPA 221.

g. See Section 716.2.5.1.2.

h. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *International Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

i. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

j. *Fire protective curtain assemblies* in accordance with Section 716.4 shall be deemed equivalent in *fire protection rating* to 20-minute fire doors in ~~*fire-resistance-rated corridor* walls and *smoke barrier* walls~~ accordance with Section 716.2.2.1.

716.4 Fire protective curtain assemblies in corridors and smoke barriers. *Fire protective curtain assemblies* shall have a minimum *fire protection rating* of 20 minutes without the hose stream test where located in *corridor* walls and *smoke barrier* walls having a *fire-resistance rating* in accordance with Table 716.1(2) and shall comply with the provisions of this section.

716.4.1 Testing requirements. Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials that conforms to the following test requirements:

1. Fire protective curtain assemblies shall be tested without hose stream in accordance with UL 10D.
2. Fire protective curtain assemblies shall comply with the smoke and draft control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784.

716.4.2 Labeled protective assemblies. *Fire protective curtain assemblies* shall be labeled by an *approved agency*. The *labels* shall comply with NFPA 80, and shall be permanently affixed to the bottom bar.

716.4.2.1 Fire protective curtain assembly labeling requirements. *Fire protective curtain assemblies* shall be *labeled* showing the name of the manufacturer or other identification readily traceable back to the manufacturer, the name or trademark of the third-party inspection agency ~~and~~ the *fire protection rating* *and show the letter "S" to confirm compliance with UL 1784 as smoke and draft control doors*. ~~Smoke and draft control assemblies complying with UL 1784 shall be *labeled* as such and shall comply with Section 716.4.2.3. Labels shall be approved and permanently affixed.~~ The label shall be applied at the factory or location where fabrication and assembly are performed.

716.4.2.2 Oversized assemblies. Oversized fire protective curtain assemblies shall bear an oversized label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. Where a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the fire protective curtain assembly conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.

~~**716.4.2.3 Smoke and draft control assembly labeling requirements.** Smoke and draft control assemblies complying with UL 1784 shall be labeled in accordance with Section 716.4.2.1 and shall show the letter "S" on the fire-rating label of the assembly.~~

~~**716.4.3 Installation.** *Installation of fire protective curtain assemblies* in corridors and smoke barriers shall be in accordance with NFPA 105.~~

716.4.3~~4~~ Means of egress. *Fire protective curtain assemblies* shall not be used as required *means of egress* doors in accordance with Section 1010.

Reason: This code change does not increase the market potential for fire protective curtain assemblies. FS67 is intended to provide clear guidelines within the code as to where and when they can be used safely and legitimately.

The current language, Section 716.4 Fire protective curtain assembly, does not provide clear and concise direction for the use of these fire protective curtains as opening protectives in the IBC. It is incomplete and leaves room for misinterpretation as evidenced by several attempts since the 2015 code development cycle to bring clarity in the application of these provisions.

There is no mention of fire protective curtain assemblies in Table 716.1(2) nor are there any references to Section 716.4 anywhere in the code. These major holes in the code make it difficult to enforce and appropriately apply the code to these systems and they are often misapplied due to this lack of direction. This code change connects those missing links and assigns fire protective curtain assemblies to their rightful place in the IBC.

One helpful connection is that without a hose stream test, fire protective curtain assemblies tested to UL 10D only meet the fire protection rating of 20-minute fire doors in corridors and smoke barrier walls. All other opening protectives require a hose stream performance test and fire protective curtain assemblies cannot be applied in any walls requiring opening protectives to be rated higher than 20 minutes. Examples of where they cannot be used are anytime a Fire Barrier wall is required such as shafts, occupancy separations, etc. This code change clarifies that fire protective curtains are not the same as hose-stream tested opening protectives.

It was clear there is overwhelming support to better define the use of these products when this code change was proposed in CAH #1 of this code cycle. We listened to the concerns of the structure of this code change presented by the opponents and committee and have addressed them with the edits in this updated code change proposal.

During CAH #1, a comment was made by a committee member regarding the language in footnote j and the need to clarify that fire protective curtain assemblies would undergo the same test as a 20-minute fire door. This revised code change addresses that comment with the new language that deems fire protective curtain assemblies equivalent to 20-minute fire doors in accordance with Section 716.2.2.1. In other words, fire protective curtain assemblies tested to UL 10D do undergo the same testing requirements as UL 10C without hose stream for these 20-minute applications. We feel this change satisfies the comment from the committee member.

There were also comments from the committee and opponents regarding the layout of the testing and installation requirements in the original proposal. We agree with those comments and therefore this revised code change proposal has been cleaned up to avoid any confusion.

Finally, there were concerns expressed in CAH #1 that this code change would allow for the use of fire protective curtain assemblies to replace swinging egress doors in a means of egress system. This code change does the opposite. The language in this code change specifically states that fire protective curtain assemblies SHALL NOT be used as means of egress doors.

There are applications in which a 20-minute fire rating without hose stream is acceptable, yet not as a required element in a means of egress system. Included are photos of those applications. The intended purpose of this code change is to limit the use of fire protective curtain assemblies to only these applications that do not require egress.

The following photos are examples of corridor separation in two-story openings where egress through the assembly is not required:

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

Justification for no cost impact:

This proposal, like the original code change, is to clarify the current intended application of the IBC for these assemblies.

Comment (CAH2)# 738

FS69-24

IBC: TABLE 717.3.2.1; IMC®: [BF] TABLE 607.3.2.1

Proposed Change as Submitted

Proponents: Jeanne Rice, NYSDOS (jeanne.rice@dos.ny.gov); Chad Sievers, NYS, NYS DOS (chad.sievers@dos.ny.gov); Kevin Duerr-Clark, NYS DOS, NYS DOS (kevin.duerr-clark@dos.ny.gov); China Clarke, New York State Dept of State, Manager Technical Support Unit (china.clarke@dos.ny.gov)

2024 International Building Code

Revise as follows:

TABLE 717.3.2.1 FIRE DAMPER RATING[a]

TYPE OF PENETRATION	MINIMUM DAMPER RATING (hours)
Less than 3-hour fire-resistance-rated assemblies	1.5
3-hour or greater fire-resistance-rated assemblies	3

a. Corridor fire dampers shall also comply with the provisions of section 717.3.2.4.

2024 International Mechanical Code

Revise as follows:

[BF] TABLE 607.3.2.1 FIRE DAMPER RATING[a]

TYPE OF PENETRATION	MINIMUM DAMPER RATING (hour)
Less than 3-hour fire-resistance-rated assemblies	$1\frac{1}{2}$
3-hour or greater fire-resistance-rated assemblies	3

a. Corridor fire dampers shall also comply with the provisions of section 607.3.2.4.

Reason: When looking for the required rating for fire dampers, users may consult Table 717.3.2.1 and determine the rating based solely on the information in this table, without noticing the provisions for corridor fire dampers in Section 717.3.2.4. The proposed change adds a footnote to Table 717.3.2.1 which references Section 717.3.2.4, to ensure users are aware of the corridor fire damper provisions.

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

Justification for no cost impact:

The proposed change adds a reference to an existing section into the footnotes for an existing table. This change is for clarification only and does not add any provisions.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee did not approve adding the proposed text. The committee indicated that the proposed text needs more clarification (Vote: 12-0).

Individual Consideration Agenda

Comment 1:

IBC: TABLE 717.3.2.1; IMC®: [BF] TABLE 607.3.2.1

Proponents: Jeanne Rice, NYSDOS (jeanne.rice@dos.ny.gov); Chad Sievers, NYS, NYS DOS (chad.sievers@dos.ny.gov); Kevin Duerr-Clark, NYS DOS, NYS DOS (kevin.duerr-clark@dos.ny.gov); Stephen Van Hoose, NYS DOS, NYS DOS (stephen.vanhoose@dos.ny.gov); China Clarke, New York State Dept of State, Manager Technical Support Unit (china.clarke@dos.ny.gov) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

TABLE 717.3.2.1 FIRE DAMPER RATING[a]

TYPE OF PENETRATION	MINIMUM DAMPER RATING (hours)
Less than 3-hour fire-resistance-rated assemblies	1.5
3-hour or greater fire-resistance-rated assemblies	3

a. The requirements of this table are not applicable to *corridor dampers.* ~~Corridor fire dampers shall also comply with the provisions of~~ See section 717.3.2.4 for corridor damper provisions.

2024 International Mechanical Code

Revise as follows:

[BF] TABLE 607.3.2.1 FIRE DAMPER RATING[a]

TYPE OF PENETRATION	MINIMUM DAMPER RATING (hour)
Less than 3-hour fire-resistance-rated assemblies	$1^1/_2$
3-hour or greater fire-resistance-rated assemblies	3

a. The requirements of this table are not applicable to *corridor dampers.* ~~Corridor fire dampers shall also comply with the provisions of~~ See section 607.3.2.4 for corridor damper provisions.

Reason: NYSDOS has received numerous questions regarding how to apply the Table 717.3.2.1 of the IBC (Table 607.3.2.1 of the IMC) requirements to corridor dampers. However, this table provides requirements for fire dampers, not corridor dampers. Fire dampers prevent the passage of fire, but are not specifically designed to limit the spread of smoke. Corridor dampers are a specific type of damper that is only utilized in ducts which penetrate corridor ceilings in fire-resistance-rated corridors - ceilings which are permitted to be constructed as required for corridor walls. Corridor dampers act as both fire and smoke dampers, preserving the horizontal barrier created by the ceiling.

The modified proposal is intended to clearly delineate that Table 717.3.2.1 (Table 607.3.2.1 of the IMC) should not be used for corridor dampers, and provide a reference to Section 717.3.2.4 of the IBC (Section 607.3.2.4 of the IMC), which provides requirements for corridor dampers. This pointer, included as a footnote to the table, should direct users to the proper requirements for the type of damper they intend to use, and limit the incorrect use of this table to provide requirements for corridor dampers. Corridor dampers are required to be 1 hour fire-resistance-rated, while the shortest allowed fire resistance rating for fire dampers is 1.5 hours. This pointer will ensure the appropriate level of protection for corridor ceiling penetrations while ensuring that corridor dampers are not over-designed or over-built.

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

Justification for no cost impact:

The proposed modification, as well as the original proposal, merely add a pointer to the correct section for corridor damper requirements. No new requirements are added.

Comment (CAH2)# 417

FS75-24

IBC: 717.6.1; IMC®: [BF] 607.6.1

Proposed Change as Submitted

Proponents: Tony Crimi, A.C. Consulting Solutions Inc., International Firestop Council (tcrimi@sympatico.ca)

2024 International Building Code

Revise as follows:

717.6.1 Through penetrations. A duct constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two *stories*is permitted without *shaft enclosure* protection, provided that a *listed fire damper* is installed at the floor line or the duct is protected in accordance with Section 714.5. For air transfer openings, see Section 712.1.9. **Exceptions:**

1. In occupancies other than Groups I-2 and I-3, a duct is permitted to penetrate three floors or less without a *fire damper* at each floor, provided that such duct meets all of the following requirements:
   - ~~1~~ 1.1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0.0187 inches (0.4712 mm) (No. 26 gage).
   - ~~2~~ 1.2. The duct shall open into only one *dwelling unit* or *sleeping unit* and the duct system shall be continuous from the unit to the exterior of the *building*.
   - ~~3~~ 1.3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m^2) in any 100 square feet (9.3 m^2) of floor area.
   - ~~4~~ 1.4. The *annular space* around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated.
   - ~~5~~ 1.5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a *listed ceiling radiation damper* installed in accordance with Section 717.6.2.1.2
2. A duct is permitted to penetrate three floors or less without a fire damper at each floor provided the surface of the duct is continuously covered on all sides from a point at which the duct penetrates a ceiling or floor to the outlet terminal with a classified, listed and labeled system specifically evaluated for such purpose in accordance with nationally recognized standards for such enclosure materials, and penetrations comply with the requirements of Section 714.5 of the International Building Code.

2024 International Mechanical Code

Revise as follows:

[BF] 607.6.1 Through penetrations. A duct constructed of *approved* materials in accordance with Section 603 that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection provided that a *listed* fire damper is installed at the floor line or the duct is protected in accordance with Section 714.5 of the International Building Code. For air transfer openings, see Item 6, Section 712.1.9 of the International Building Code.

~~**Exception**~~ **Exceptions:**

1. In occupancies other than Groups I-2 and I-3, a duct is permitted to penetrate three floors or less without a fire damper at each floor provided that it meets all of the following requirements:

   ~~1~~ 1.1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum thickness of 0.0187 inch (0.4712 mm) (No. 26 gage).

   ~~2.~~ 1.2. The duct shall open into only one *dwelling unit* or *sleeping unit* and the duct system shall be continuous from the unit to the exterior of the *building*.

   ~~3.~~ 1.3. The duct shall not exceed a 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches for any 100 square feet (64 516 mm^2 per 9.3 m^2) of the floor area.

   ~~4.~~ 1.4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

   ~~5.~~ 1.5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a *listed ceiling radiation damper* installed in accordance with Section 607.6.2.1.

2. A duct is permitted to penetrate three floors or less without a fire damper at each floor provided the surface of the duct is continuously covered on all sides from a point at which the duct penetrates a ceiling or floor to the outlet terminal with a classified, listed and labeled system specifically evaluated for such purpose in accordance with nationally recognized standards for such enclosure materials, and penetrations comply with the requirements of Section 714.5 of the International Building Code.

Reason: This proposal provides an additional option for ducts that penetrate three or less floors. Third-party certification organizations like UL and Intertek provide listing and labelling services for fire-resistant duct systems using a variety of nationally recognized Standards and applicable ICC-ES criteria. These Listings have been in the marketplace for many years and have proven their effectiveness.

The many Listings for fire-resistant duct systems provide an alternate to required fire dampers when ducts pass through a fire separation. They also cover criteria to assess performance as shaft enclosures for vertical ducts.

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

Justification for no cost impact:

This proposal adds an additional option for protection of ducts. It does not remove any existing provisions or mandate additional costs.

FS75-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee mentioned that the proposed text needs more work and the language needs to be specific. The committee indicated that there is a lack of data to support the proposed text. The committee suggested adding the proper standard (Vote: 11-0).

FS75-24

Individual Consideration Agenda

Comment 1:

IBC: 717.6.1; IMC®: [BF] 607.6.1

Proponents: Tony Crimi, A.C. Consulting Solutions Inc., International Firestop Council (tcrimi@sympatico.ca) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

717.6.1 Through penetrations. A duct constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two *stories* is permitted without *shaft enclosure* protection, provided that a *listed fire damper* is installed at the floor line or the duct is protected in accordance with Section 714.5. For air transfer openings, see Section 712.1.9. **Exceptions:**

1. In occupancies other than Groups I-2 and I-3, a duct is permitted to penetrate three floors or less without a *fire damper* at each floor, provided that such duct meets all of the following requirements:
   1.1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0.0187 inches (0.4712 mm) (No. 26 gage).
   1.2. The duct shall open into only one *dwelling unit* or *sleeping unit* and the duct system shall be continuous from the unit to the exterior of the *building*.
   1.3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m^2) in any 100 square feet (9.3 m^2) of floor area.
   1.4. The *annular space* around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated.
   1.5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a *listed ceiling radiation damper* installed in accordance with Section 717.6.2.1.2

2. A duct is permitted to penetrate three floors or less without a fire damper at each floor provided the surface of the duct is continuously covered on all sides from a point at which the duct penetrates a ceiling or floor to the outlet terminal with a tested, classified, listed and labeled system using the standard time-temperature curve of ASTM E119 or UL 263, specifically evaluated for such purpose. ~~in accordance with nationally recognized standards for such enclosure materials, and penetrations~~ Penetrations shall comply with the requirements of Section 714.5 of the International Building Code.

2024 International Mechanical Code

[BF] 607.6.1 Through penetrations. A duct constructed of *approved* materials in accordance with Section 603 that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection provided that a *listed* fire damper is installed at the floor line or the duct is protected in accordance with Section 714.5 of the International Building Code. For air transfer openings, see Item 6, Section 712.1.9 of the International Building Code.

Exceptions:

1. In occupancies other than Groups I-2 and I-3, a duct is permitted to penetrate three floors or less without a fire damper at each floor provided that it meets all of the following requirements:

   1.1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum thickness of 0.0187 inch (0.4712 mm) (No. 26 gage).

   1.2. The duct shall open into only one *dwelling unit* or *sleeping unit* and the duct system shall be continuous from the unit to the exterior of the *building*.

   1.3. The duct shall not exceed a 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches for any 100 square feet (64 516 mm^2 per 9.3 m^2) of the floor area.

   1.4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

   1.5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a *listed ceiling radiation damper* installed in accordance with Section 607.6.2.1.

2. A duct is permitted to penetrate three floors or less without a fire damper at each floor provided the surface of the duct is continuously covered on all sides from a point at which the duct penetrates a ceiling or floor to the outlet terminal with a tested, classified, listed and labeled system using the standard time-temperature curve of ASTM E119 or UL 263, specifically evaluated for such purpose. ~~in accordance with nationally recognized standards for such enclosure materials, and penetrations~~ Penetrations shall comply comply with the requirements of Section 714.5 of the International Building Code.

Reason: This proposal provides an additional option for ducts that penetrate three or less floors. Third-party certification organizations like UL and Intertek provide listing and labelling services for fire-resistant duct systems using a variety of nationally recognized Standards and applicable ICC-ES criteria. These Listings have been in the marketplace for many years and have proven their effectiveness. All of the Listings are based on the ASTM E119, UL 263 or equivalent time-temperature exposure.

The many Listings for fire-resistant duct systems provide an alternate to required fire dampers when ducts pass through a fire separation. They also cover criteria to assess performance as shaft enclosures for vertical ducts.

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

Justification for no cost impact:

This proposal adds an additional option for protection of ducts. It does not remove any existing provisions or mandate additional costs.

Comment (CAH2)# 431

FS76-24

IBC: 717.6.2.1.1, 717.6.2.1.2; IMC®: [BF] 607.6.2.1.1, [BF] 607.6.2.1.2

Proposed Change as Submitted

Proponents: Amanda Hickman, The Hickman Group, Air Movement and Control Association International, Inc. (AMCA) (amanda@thehickmangroup.com)

2024 International Building Code

Revise as follows:

717.6.2.1.1 Dynamic systems. Only *ceiling radiation dampers labeled* for use in dynamic systems shall be installed in heating, *ventilation* and air-conditioning systems that do not automatically shut down~~designed to operate with fans on~~ during a fire.

717.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall only be installed in ~~provided with~~ systems that ~~are~~ automatically shut down in the event of~~not designed to operate during~~ a fire. ~~**Exceptions:**~~

1. ~~Where a static *ceiling radiation damper* is installed at the opening of a duct, a *smoke detector* shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes in the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be *listed* for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local *smoke detectors* require a minimum velocity to operate.~~
2. ~~Where a static *ceiling radiation damper* is installed in a ceiling, the *ceiling radiation damper* shall be permitted to be controlled by a smoke detection system installed in the same room or area as the *ceiling radiation damper.*~~
3. ~~A static *ceiling radiation damper* shall be permitted to be installed in a room where an occupant sensor is provided within the room that will shut down the system.~~

2024 International Mechanical Code

Revise as follows:

[BF] 607.6.2.1.1 Dynamic systems. *Ceiling radiation dampers* installed in heating, ventilation and air-conditioning systems that do not automatically shut down~~designed to operate with fans on~~ during a fire shall be labeled for use in dynamic systems.

[BF] 607.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall only be installed ~~only~~ in systems that automatically shut down in the event of~~are not designed to operate during~~ a fire.

~~**Exceptions:**~~

1. ~~Where a static *ceiling radiation damper* is installed at the opening of a duct, a smoke detector shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes within the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be *listed* for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.~~
2. ~~Where a static *ceiling radiation damper* is installed in a ceiling, the *ceiling radiation damper* shall be permitted to be controlled by a smoke detection system installed within the same room or area as the *ceiling radiation damper.*~~
3. ~~A static *ceiling radiation damper* shall be permitted to be installed within a room where an occupant sensor is provided within the room that will shut down the system.~~

Reason:

The changes to Sections 717.6.2.1.1 and 717.6.2.1.2 are editorial and align the description of dynamic and static systems with the code language already used in IBC section 717.2.3 outlining static dampers.

Exception 1 and Exception 2 are not exceptions to the charging language, but rather are specific methods for automatically shutting down a system in the event of a fire. Additionally, exception 2 as written, allows a static rated ceiling radiation damper to be controlled by a smoke detector without shutting down the system. This would result in the static damper having to close under airflow, which it is not listed to do.

Exception 3 does outline a true exception to the charging language as it describes a method for shutting down the system other than in the event of a fire. However, using an occupancy sensor to shut down the system could still result in the static rated damper having to close under airflow because many occupancy sensors utilize a delay prior to shutting the system down.

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

Justification for no cost impact:

The proposed changes will not impact the cost of construction as they are only editorial and align system definitions with existing code language.

FS76-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee agreed with the concept of the proposal but the language needs to be correlated better for the CAH2 (Vote: 11-0).

FS76-24

Individual Consideration Agenda

Comment 1:

IBC: 717.6.2.1.1; IMC®: [BF] 607.6.2.1.1

Proponents: Amanda Hickman, The Hickman Group, Air Movement and Control Association International, Inc. (AMCA) (amanda@thehickmangroup.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

717.6.2.1.1 Dynamic systems. Only *ceiling radiation dampers labeled* for use in dynamic systems shall be installed in heating, *ventilation* and air-conditioning systems that do not automatically shut down during a fire.

Exception: *Ceiling radiation dampers* tested and *listed* in combination with specific fan models shall not be required to be *labeled* for dynamic systems.

2024 International Mechanical Code

Revise as follows:

[BF] 607.6.2.1.1 Dynamic systems. *Ceiling radiation dampers* installed in heating, ventilation and air-conditioning systems that do not automatically shut down during a fire shall be labeled for use in dynamic systems.

Exception: *Ceiling radiation dampers* tested and *listed* in combination with specific fan models shall not be required to be *labeled* for dynamic systems.

Reason:
Proposals FS76 and FS77 were both submitted in an attempt to clarify the current language which was originally intended to provide direction on various ceiling radiation damper (CRD) installations, where the static CRD will perform as intended because a static condition had been created. In reviewing the existing code language, it became apparent that the current exceptions to Section 717.6.2.1.2 are not exceptions to a static system, but are describing various methods of changing a dynamic condition into a static condition, which would then allow for the use of a static CRD. If those exceptions are kept in the code, they create confusion, as well as place limitations on what can be done to make the installation a static condition during a fire event.

Thus, the proponents of FS76 and FS77 worked together after each requested disapproval of our respective proposals at the first committee action hearing in order to work out an acceptable solution. This Public Comment represents that agreed solution. The committee indicated that they liked the clarity of FS76 so we built upon that structure to add a clean and concise exception to the dynamic section which provides a codified means to shutting down the system in a manner where a static CRD will perform as intended.

The proposed exception to Dynamic Systems outlines a scenario in which a ceiling radiation damper, though labeled as a static CRD, has been tested and certified to function correctly under fire conditions when paired with specific fan models. These combinations can either be integrated at the factory or assembled separately for use in the field in accordance with the CRD manufacturer's installation instructions. There are several different manufacturers who have obtained testing and third party certification of these combinations in accordance with UL 555C, which is already referenced in the code. If this proposed language is approved for inclusion in the 2027 code, we recommend updating the current commentary for this section to incorporate the aforementioned information.

This approach maintains the integrity and performance of fire-rated assemblies while providing clear guidance for practical implementation. Furthermore, the public comment enhances the clarity and application of the provisions concerning ceiling radiation dampers in both static and dynamic systems. This collaborative effort addresses the committee's feedback and provides a viable comprehensive solution for industry practitioners.

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

Justification for no cost impact:

The proposed changes will not impact the cost of construction as they are only editorial and align system definitions with existing code language. Allowing the use of static CRDs that are tested and listed in combination with specific fan models provides another installation option for the installer.

Comment (CAH2)# 282

FS79-24

IBC: 718.2.1, AWC Chapter 35 (New)

Proposed Change as Submitted

Proponents: Edward Lisinski, American Wood Council (elisinski@awc.org)

2024 International Building Code

Revise as follows:

718.2.1 Fireblocking materials. *Fireblocking* shall consist of the following materials:

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 0.719-inch (18.3 mm) *wood structural panels* with joints backed by 0.719-inch (18.3 mm) *wood structural panels*.
4. One thickness of 0.75-inch (19.1 mm) *particleboard* with joints backed by 0.75-inch (19 mm) *particleboard*.
5. One-half-inch (12.7 mm) *gypsum board*.
6. One-fourth-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of *mineral wool*, *mineral fiber* or other *approved* materials installed in such a manner as to be securely retained in place.
8. Cellulose insulation tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.
9. *Mass timber* complying with Section 2304.11.
10. One thickness of $^{19}/_{32}$-inch (15.1 mm) *fire-retardant-treated wood* structural panel complying with Section 2303.2.
11. Fireblocking materials in accordance with ANSI/AWC FDS.

Add new standard(s) as follows:

AWC

American Wood Council
222 Catoctin Circle SE, Suite 201
Leesburg, VA 20175

ANSI/AWC FDS-2024: Fire Design Specification (FDS) for Wood Construction

Reason: This proposal recognizes fireblocking materials in accordance with ANSI/AWC *2024 Fire Design Specification (FDS) for Wood Construction* Section 2.5.2 and adds a new reference to that standard in the code. The FDS includes prescriptive options for wood fireblocking of structural composite lumber and engineered wood rim board and for use of other wood members and wood protection materials designed in accordance with Chapter 3 of ANSI/AWC FDS to limit the passage of flames for at least 15 minutes. The minimum performance time of 15 minutes is based on performance associated with ½" gypsum board in Item 5 of IBC Section 718.2.1.

The FDS was developed as an American National Standard through the AWC ANSI-approved consensus standards development process, and is available on the AWC website at the following location: https://awc.org/wp-content/uploads/2023/11/AWC_FDS2024_20231103_AWCWEBSITE.pdf

Bibliography: ANSI/AWC *2024 Fire Design Specification (FDS) for Wood Construction*. View this document online: https://awc.org/wp-content/uploads/2023/11/AWC_FDS2024_20231103_AWCWEBSITE.pdf

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

Estimated Immediate Cost Impact:

$0

Estimated Immediate Cost Impact Justification (methodology and variables):

The proposal provides a reference to the FDS, which contains additional options for fireblocking materials which are not currently listed in Section 718.2.1, such as structural composite lumber and engineered wood rim board. The inclusion of this additional option does not in and of itself increase or decrease the overall cost impact of the code, because this option may or may not be chosen. The existing options are still relevant, and if chosen, have no cost impact on the actual code requirements.

FS79-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal due to the fact that the text only referred to the standard. The committee suggested that more details need to be added to the proposed text instead of only referring to the standard (Vote: 10-1).

FS79-24

Individual Consideration Agenda

Comment 1:

IBC: 718.2.1, AWC Chapter 35

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

Modify as follows:

2024 International Building Code

Revise as follows:

718.2.1 Fireblocking materials. *Fireblocking* shall consist of the following materials:

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 0.719-inch (18.3 mm) *wood structural panels* with joints backed by 0.719-inch (18.3 mm) *wood structural panels.*
4. One thickness of 0.75-inch (19.1 mm) *particleboard* with joints backed by 0.75-inch (19 mm) *particleboard.*
5. One-half-inch (12.7 mm) *gypsum board.*
6. One-fourth-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of *mineral wool*, *mineral fiber* or other *approved* materials installed in such a manner as to be securely retained in place.

8. Cellulose insulation tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.
9. *Mass timber* complying with Section 2304.11.
10. One thickness of $^{19}/_{32}$-inch (15.1 mm) *fire-retardant-treated wood* structural panel complying with Section 2303.2.
11. ~~Fireblocking materials in accordance with ANSI/AWC FDS.~~ One layer of 1 1/8-inch (29 mm) *structural composite lumber.*
12. One layer of 1 1/8-inch (29 mm) *engineered wood rim board.*

Delete without substitution:

AWC

American Wood Council
222 Catoctin Circle SE, Suite 201
Leesburg, VA 20175

~~ANSI/AWC FDS-2024:~~ ~~Fire Design Specification (FDS) for Wood Construction~~

Reason: This proposal adds one layer of 1⅛-inch thick structural composite lumber and one layer of 1⅛-inch thick engineered wood rim board to the prescriptive list of approved fireblocking materials in Section 718.2.1. In Committee Action Hearing #1, the Code Development Committee recommended adding specific materials to the prescriptive list of fireblocking materials instead of making a reference to the ANSI/AWC *Fire Design Specification (FDS) for Wood Construction*. By directly including these materials in the list, builders and designers have additional options for fireblocking without having to reference another document. The reference to the FDS was removed as it no longer is proposed to be referenced in this particular section, however it should be noted that the justification for inclusion of these materials as acceptable fireblocking materials can be found in the FDS.

Note that the proposed language in this comment follows the formatting for the rest of this section that was approved by the committee in FS78-24. The unchanged portions of this section are not intended to revert back to the current code language. It is intended that they should continue to be modified as approved in FS78-24.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

$0 This proposal may or may not decrease the cost of construction if these materials are used, but it cannot increase the cost of construction because these materials are not required to be used. Any existign method of providing fireblocking can still be used if this proposal is accepted.

Estimated Immediate Cost Impact Justification (methodology and variables):

This is not a mandatory proposal and all existing methods of providing fireblocking are still preserved. These additional materials provide more options for a designer or builder. If a designer or builder does not want to use these materials, they can continue to build with whatever code compliant fireblocking materials they are currently using or specifying. However, if they have excess engineered wood products on a job site, or if these materials are used in a construction detail, by approving this proposal they could then be used as fireblocking. This could potentially decrease the cost of construction, reduce waste and/or reduce the need for additional fireblocking materials to be installed.

Comment (CAH2)# 25

FS85-24

IBC: SECTION 722, 722.1

Proposed Change as Submitted

Proponents: Bonnie Manley, AISC, AISC (manley@aisc.org); Jon-Paul Cardin, The CFSteel Group, The CFSteel Group (jp@cfsteelgroup.org)

2024 International Building Code

SECTION 722
CALCULATED FIRE RESISTANCE

Revise as follows:

722.1 General. The provisions of this section contain procedures by which the *fire resistance* of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated *fire resistance* of specific materials or combinations of materials shall be established by one of the following:

1. *Concrete,*concrete *masonry* and clay*masonry* assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.
2. Precast and precast, prestressed *concrete* assemblies shall be permitted in accordance with PCI 124.
3. Steel assemblies and composite steel and concrete assemblies shall be permitted in accordance with AISC 360 Appendix 4, Section 4.3 ~~Chapter 5 of ASCE 29~~.
4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.

Reason: This proposal is one of three that fully update Chapter 7 provisions of the IBC to reflect current structural steel industry standards. The 2024 edition of the IBC has already adopted the 2022 edition of AISC 360, *Specification for Structural Steel Buildings*, in Chapter 35 and elsewhere (Sections 722.5.2.2.1, 1604.3.3, 1705.2.1, 2202.1, and 2202.2.1.1). The purpose of this proposal is to update the methodology for the calculation of fire resistance for structural steel assemblies to recognize the applicable portion of AISC 360-22's mandatory Appendix 4, Structural Design for Fire Conditions (specifically Appendix 4, Section 4.3). The proposal also expands the reference to include composite steel and concrete assemblies, which are newly added in the 2022 edition of AISC 360, Appendix 4, Section 4.3.

Since the 2003 edition, the IBC has included ASCE 29, *Standard Calculation Methods for Structural Fire Protection,* as the only means to calculate the fire resistance of steel assemblies. The first edition of ASCE 29 referenced in the 2003 IBC was the 1999 edition; today, the 2024 IBC references the 2005 edition (although the 11/1/23 IBC-24 errata notes a 2017 edition; however, it is not available on the ASCE website for purchase as of 1/8/24). Since the 2006 edition of the IBC, the IBC has mandated AISC 360 as the basis for the design, fabrication, and erection of structural steel buildings. The first edition of AISC 360 referenced in the 2006 IBC was the 2005 edition, and today, the 2024 IBC references the 2022 edition.

In 2005, the committee charged with the development of AISC 360 created a new AISC 360 Appendix 4, Section 4.3 to provide calculation methods for establishing fire-resistance ratings of steel assemblies that would otherwise be determined by standard testing. AISC 360-05, Appendix 4, Section 4.3 also included a direct reference to the ASCE 29-05 calculation procedures for determining the fire-resistance ratings of steel assemblies. While intervening editions of AISC 360 Appendix 4, Section 4.3 have included this reference to ASCE 29-05, for the 2022 edition of AISC 360, the committee chose to extract the applicable calculation procedures directly from ASCE 29-05 and combine them with newly developed provisions. So, the 2024 IBC now effectively includes references to two (2) documents containing the same material on the prescriptive calculation of fire resistance for steel assemblies. However, while ASCE 29 has remained static, the methodology now found in Appendix 4, Section 4.3 of AISC 360-22 has been enhanced to reflect the latest requirements based on research, analysis, and testing. By deleting the direct reference to ASCE 29 and, instead, referencing AISC 360,

this proposal streamlines the IBC by citing only one (1) document with the most complete and up-to-date provisions for determining the fire resistance of steel assemblies and composite steel and concrete assemblies.

AISC makes its standards available to all free of charge. AISC 360-22 can be downloaded for free from https://www.aisc.org/publications/steel-standards/. Please refer to the full AISC 360-22 commentary for technical background and guidance on applying the provisions.

From the AISC-360 Commentary on Appendix 4, Section 4.3: "The primary source of accepted fire-resistance calculations for structural steel has been AISI and its ASTM E119 fire research conducted throughout the 1970s and 1980s. These industry-sponsored developments were originally captured in three AISI design guide publications (AISI, 1980, 1981, 1984), which were subsequently included in the preceding and current editions of Section 5 of SEI/ASCE/SFPE Standard 29, Standard Calculation Methods for Structural Fire Protection (ASCE, 2005) and in the U.S. model building codes. More recently, all of this information was summarized and well illustrated in AISC Design Guide 19. The standard fire protection and fire-resistance calculation methods for structural steel have now also been consistently transferred into the current National Fire Protection Association (NFPA) and International Code Council (ICC) model building codes. The inclusion of provisions for fire-resistance calculations in this Specification was motivated by AISC's and the steel industry's interest in duly maintaining this important content and contributing to its future progress. In this manner, AISC desires to parallel the development of prescriptive fire-resistive criteria for the concrete, masonry, and timber industries that are embodied in separate standards authored by the respective committees."

Bibliography: AISC (2022), *Specification for Structural Steel Buildings*, ANSI/AISC 360-22, American Institute of Steel Construction, Chicago, Ill., August 1, 2022.

Available at: https://www.aisc.org/publications/steel-standards/.

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

Justification for no cost impact:

This proposal the application of a standard already adopted in the 2024 IBC.

FS85-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee determined that the proposed language reflects current structural steel industry standards. The committee agreed with updating the methodology for the calculation of fire resistance for structural steel assemblies to recognize the applicable portion of AISC 360-22's mandatory Appendix 4, Structural Design for Fire Conditions (specifically Appendix 4, Section 4.3) (Vote: 11-0).

FS85-24

Individual Consideration Agenda

Comment 1:

IBC: 722.1

Proponents: Bonnie Manley, AISC, AISC (manley@aisc.org); Richard Walke, Creative Technology Inc. and CM Services, National Fireproofing Contractors Association (richwalke61@gmail.com) requests As Modified by Committee (AMC2)

Further modify as follows:

2024 International Building Code

722.1 General. The provisions of this section contain procedures by which the *fire resistance* of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated *fire resistance* of specific materials or combinations of materials shall be established by one of the following:

1. *Concrete,*concrete *masonry* and clay*masonry* assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.
2. Precast and precast, prestressed *concrete* assemblies shall be permitted in accordance with PCI 124.
3. Steel assemblies and composite steel and concrete assemblies shall be permitted in accordance with AISC 360 Appendix 4, Section 4.3. **Exception:** Establishing equivalency to the standard fire-resistance rating using the advanced methods of analysis of AISC 360 Appendix 4.2 in combination with the fire exposure specified in ASTM E119 or UL 263 as the design-basis fire, as permitted in AISC 360 Appendix 4, Section 4.3.1, shall be in accordance with the requirements of Section 104.2.3
4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.

Reason: AISC 360-22, Appendix Section 4.3.1 permits the use of an advanced analysis procedure in accordance with Appendix Section 4.2.4c as an equivalent method when combined with the fire exposure specified in ASTM E119 or UL 263 as follows:

> **4.3.1. Qualification Standards**
>
> Structural members and components in steel buildings shall be qualified for the rating period in conformance with ASTM E119 or ANSI/UL 263. Demonstration of compliance with these requirements using the procedures specified for steel construction in Section 5 of Standard Calculation Methods for Structural Fire Protection (ASCE/SEI/SFPE 29) is permitted. **It is also permitted to demonstrate equivalency to such standard fire-resistance ratings using the advanced analysis methods in Section 4.2 in combination with the fire exposure specified in ASTM E119 or ANSI/UL 263 as the design-basis fire.**
>
> The generic steel assemblies described in Table A-4.3.1 shall be deemed to have the fire-resistance ratings prescribed therein.

The proposed exception clarifies that this method must follow the requirements of the alternate materials, design, and methods of construction and equipment as specified in IBC Section 104.2.3.

The need for this clarification was first identified in testimony by NFCA at the ICC CAH#1. AISC and NFCA have worked together to develop this comment addressing their concern. Additionally, work is now underway on the next edition of AISC 360 (2027). It is anticipated that this will be better clarified in that next edition and that this exception will be unneeded after the 2027 edition of the IBC.

Bibliography: AISC (2022), *Specification for Structural Steel Buildings*, ANSI/AISC 360-22, American Institute of Steel Construction, Chicago, Ill., August 1, 2022.
Available at: https://www.aisc.org/publications/steel-standards/.

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

Justification for no cost impact:

This proposal references a standard already adopted in the 2024 IBC.

Comment (CAH2)# 484

FS86-24

IBC: 722.1

Proposed Change as Submitted

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org); Steve Skalko, Stephen V. Skalko, P.E. & Associates LLC, Precast/Prestressed Concrete Institute (svskalko@svskalko-pe.com); Shamim Rashid-Sumar, National Ready Mixed Concrete Association, National Ready Mixed Concrete Association (ssumar@nrmca.org); Nicholas Lang, Concrete Masonry & Hardscapes Association, Representing Masonry Alliance for Codes and Standards, Masonry Alliance for Codes & Standards (nlang@ncma.org)

2024 International Building Code

Revise as follows:

722.1 General. The provisions of this section contain procedures by which the *fire resistance* of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated *fire resistance* of specific materials or combinations of materials shall be established by one of the following:

1. *Concrete,*concrete *masonry* and clay*masonry* assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.
2. Precast and precast, prestressed *concrete* assemblies shall be permitted in accordance with PCI 124.
3. Steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29.
4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.
5. Steel columns protected with concrete or masonry and hollow steel tubes filled with concrete shall be permitted in accordance with ACI/TMS 216.1

Reason: This code change proposal adds ACI/TMS 216.1 as a compliance path for structural steel columns protected with concrete or masonry and hollow structural steel columns filled with concrete. ACI/TMS 216.1 continues to provide the methods to provide fire protection for structural steel columns using concrete or masonry and fire resistance ratings for hollow steel columns filled with concrete. This adds an alternative to ASCE 29 as an additional resource for determining compliance.

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

Justification for no cost impact:

This changes does not increase cost as it provides an alternative compliance method to those already permitted in the code.

FS86-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal based on the approval of FS89-24 and as requested by the proponent (Vote: 10-0).

FS86-24

Individual Consideration Agenda

Comment 1:

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org) requests As Submitted

Reason: Approval as submitted based on original reason statement.

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

Comment (CAH2)# 380

FS87-24

IBC: 722.1

Proposed Change as Submitted

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org); Shamim Rashid-Sumar, National Ready Mixed Concrete Association, National Ready Mixed Concrete Association (ssumar@nrmca.org)

2024 International Building Code

Revise as follows:

722.1 General. The provisions of this section contain procedures by which the *fire resistance* of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated *fire resistance* of specific materials or combinations of materials shall be established by one of the following:

1. *Concrete,*concrete *masonry* and clay*masonry* assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.
2. Precast and precast, prestressed *concrete* assemblies shall be permitted in accordance with PCI 124 or ACI/TMS 216.1.
3. Steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29.
4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.

Reason: This proposal clarifies that ACI/TMS 216.1 is a appropriate for determining the fire resistance ratings of precast, prestressed concrete assemblies. Item 1, does not distinguish between prestressed and non-prestressed assemblies and both are covered in ACI/TMS 216.1. By reading Item 2 as currently written implies that only compliance with PCI 124 is acceptable precast, prestressed concrete assemblies. Prior to the addition of PCI 124 to the IBC, the user was directed to ACI/TMS 216.1 for all concrete assemblies including precast, prestressed concrete. This change provides clarity that ACI/TMS 216.1 remains an appropriate compliance path for precast, prestressed concrete assemblies.

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

Justification for no cost impact:

No technical change, simply clarifies that ACI/TMS 216.1 remains applicable for precast, prestressed concrete, per Item 1

FS87-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal based on the approval of FS89-24 and as requested by the proponent (Vote: 10-0).

FS87-24

Individual Consideration Agenda

Comment 1:

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org) requests As Submitted

Reason: Stand on original reason statement.

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

Comment (CAH2)# 385

FS94-24

IBC: 803.13, TABLE 803.13

Proposed Change as Submitted

Proponents: Jeff Grove, Chair, Building Code Action Committee (BCAC) (bcac@iccsafe.org)

2024 International Building Code

803.13 Interior finish requirements based on occupancy. *Interior wall and ceiling finish* shall have a classification such that the *flame spread index* and *smoke-developed index* values are not higher than those corresponding to the classification specified in Table 803.13 for the group and location designated. *Interior wall and ceiling finish* materials tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.1.1.1, shall be permitted to be used where a Class A classification in accordance with ASTM E84 or UL 723 is required.

Revise as follows:

TABLE 803.13 INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY[k]

	SPRINKLERED[l] S, S13R, S13D			NONSPRINKLERED - NS		
GROUP	Interior exit stairways and ramps and exit passageways[a, b]	Corridors and enclosure for exit access stairways and ramps	Rooms and enclosed spaces[c]	Interior exit stairways and ramps and exit passageways[a, b]	Corridors and enclosure for exit access stairways and ramps	Rooms and enclosed spaces[c]
A-1 & A-2	B	B	C	A	A[d]	B[e]
A-3[f], A-4, A-5	B	B	C	A	A[d]	C
B, E, M, R-1	B	C[lm]	C	A	B	C
R-4	B	C	C	A	B	B
F	C	C	C	B	C	C
H	B	B	C[g]	A	A	B
I-1	B	C	C	A	B	B
I-2	B	B	B[h, i]	A	A	B
I-3	A	A[j]	C	A	A	B
I-4	B	B	B[h, i]	A	A	B
R-2	C	C	C	B	B	C
R-3	C	C	C	C	C	C
S	C	C	C	B	B	C
U	No restrictions			No restrictions		

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2.

NS = Buildings not equipped throughout with an automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Sections 903.2.8 and 903.3.1.3.

a. Class C interior finish materials shall be permitted for wainscotting or paneling of not more than 1,000 square feet of applied surface area in the grade lobby where applied directly to a noncombustible base or over furring strips applied to a noncombustible base and fireblocked as required by Section 803.15.1.

b. In other than Group I-3 occupancies in buildings less than three stories above grade plane, Class B interior finish for nonsprinklered buildings and Class C interior finish for sprinklered buildings shall be permitted in interior exit stairways and ramps.

c. Requirements for rooms and enclosed spaces shall be based on spaces enclosed by partitions. Where a fire-resistance rating is required for structural elements, the enclosing partitions shall extend from the floor to the ceiling. Partitions that do not comply with this shall be considered to be enclosing spaces and the rooms or spaces on both sides shall be considered to be one room or space. In determining the applicable requirements for rooms and enclosed spaces, the specific occupancy thereof shall be the governing factor regardless of the group classification of the building or structure.

d. Lobby areas in Group A-1, A-2 and A-3 occupancies shall be not less than Class B materials.

e. Class C interior finish materials shall be permitted in places of assembly with an occupant load of 300 persons or less.

f. For places of religious worship, wood used for ornamental purposes, trusses, paneling or chancel furnishing shall be permitted.

g. Class B material is required where the building exceeds two stories.

h. Class C interior finish materials shall be permitted in administrative spaces.

i. Class C interior finish materials shall be permitted in rooms with a capacity of four persons or less.

j. Class B materials shall be permitted as wainscotting extending not more than 48 inches above the finished floor in corridors and exit access stairways and ramps.

k. Finish materials as provided for in other sections of this code.

~~l. Applies when protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.~~

l ~~m~~. Corridors in ambulatory care facilities shall be provided with Class A or B materials.

Reason: The intent of this group of proposal is to make the tables in Chapter 8 and 10 consistent with the revisions to Table 504.3, 504.4, 506.2 – using S13, S13R, S13D and NP for sprinkler requirements. This would clarify what happens when an NFPA 13D sprinkler system is used. This is not intent to change current allowances; just to clarify what requirements are applicable for an NFPA13D system. Discussion during the BCAC calls has indicated that it is needed to identifying specific code sections so that everyone has the same understanding.

Group R-4 requirements do not always have to be stated as Section 310.5 states “Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.” However, since a lot of people miss that, we are including R-4 in the proposed applicable footnotes.

Townhouses are defined as attached dwelling units that extend from foundation to grade and are open on at least two sides. If a townhouse is 3 stories or less, it can choose to comply with the IBC or IRC (Section 101.2). The IRC Section P2904 is similar to an NFPA 13D system. If the IBC is used, townhouses subdivided by firewalls into 1 or 2 units per building is a Group R-3 (Section 310.4) and townhouses subdivided by fire partitions (Section 420.2) are a Group R-2 (Section 310.3). This is important to clarify because all townhouses can use a 13D sprinkler system: Section 903.2.8 references 903.3, and 903.1.3.3 specifically stating that “Automatic sprinkler systems installed in … and townhouses shall be permitted to be installed throughout in accordance with NFPA 13D.” To make this obvious in the tables, a reference to 903.2.8 and 903.1.3.3 are added in the footnote.

Specifics for this change –

· adds the S13, S13R, S13D and NS in the table titles and footnotes with the section references for sprinklers.· Footnote l with the sprinkler reference is redundant and deleted.

This proposal is submitted by the ICC Building Code Action Committee (BCAC).

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

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

Justification for no cost impact:

This is a clarification of requirements for Group R where an NFPA13D system is permitted. There are no changes to construction requirements.

FS94-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee deemed the proposed code change clarifies the table requirements (Vote: 11-0).

FS94-24

Individual Consideration Agenda

Comment 1:

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

Reason: This item was Approved at CAH 1, and the comment proposes to Disapprove this item in its entirety.

While I agree that in the room where a sprinkler is located, a sprinkler attached to a NFPA 13D system would be beneficial, that is not what this code change says. This code change says that if the building has an NFPA 13D sprinkler system, then any room in that building is considered sprinklered and therefore is given the benefit of reducing the flame spread rating. That is an incorrect application of this logic.

The logic should be applied in a manner that provides the room containing the sprinkler to realize the benefit of being sprinklered. The footnotes indicate that NS means the the building is not equipped throughout with a sprinkler system. It has already been established that the ICC interpretation is "sprinklered throughout" means sprinklers are located where they are required. In accordance with NFPA 13D there are many areas where sprinklers are not required, yet those "rooms and enclosed spaces" would now fall under the sprinklered category and benefit from the building being sprinklered.

The intent of this sprinkler benefit in this table is that the sprinkler is located in the room where the flame spread reduction is taken. Until those two items are correlated, this code change should not be approved.

Cost Impact: No change to code.

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

Comment (CAH2)# 800

FS98-24

IBC: 1402.2, 1402.3 (New), [BS] 1402.3, FIGURE 1402.3 (New), TABLE 1402.3 (New)

Proposed Change as Submitted

Proponents: Jay Crandell, P.E., ABTG / ARES Consulting, myself (jcrandell@aresconsulting.biz); Art DeGaetano, Northeast Regional Climate Center, Cornell, self (atd2@cornell.edu)

2024 International Building Code

Revise as follows:

1402.2 Weather protection. Buildings shall be provided with a weather-resistant *exterior wall assembly* . The *exterior wall assembly* shall include flashing, as described in Section 1404.4. The *exterior wall assembly* shall be designed and constructed in such a manner as to prevent the accumulation of water within the exterior wall assembly by providing a *water-resistive barrier* behind the exterior *veneer*, as described in Section 1403.2, and a means for draining water that enters the assembly to the exterior. Where not otherwise addressed by the materials and methods for weather protection prescribed by this code, rainwater resistance shall be permitted to be demonstrated in accordance with Section 1402.3. Protection against condensation in the *exterior wall* assembly shall be provided in accordance with Section 1404.3. **Exceptions:**

1. A weather-resistant *exterior wall assembly* shall not be required over concrete or *masonry* walls designed in accordance with Chapters 19 and 21, respectively.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1403.2 and 1404.4, shall not be required for an *exterior wall assembly* that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E331 under the following conditions:
   The *exterior wall* design shall be considered to resist wind-driven rain where the results of testing, in accordance with ASTM E331, indicate that water did not penetrate control joints in the *exterior wall* , joints at the perimeter of openings or intersections of terminations with dissimilar materials.

   2.1. *Exterior wall* test assemblies shall include not fewer than one opening, one control joint, one wall/eave interface and one wall sill. Tested openings and penetrations shall be representative of the intended end-use configuration.

   2.2. *Exterior wall* test assemblies shall be not less than 4 feet by 8 feet (1219 mm by 2438 mm) in size.

   2.3. *Exterior wall* test assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (0.297 kN/m^2).

   2.4. *Exterior wall* test assemblies shall be subjected to a minimum test exposure duration of 2 hours.

3. *Exterior insulation and finish systems* (EIFS) complying with Section 1407.4.1.

Add new text as follows:

1402.3 Rainwater resistance.. The rainwater resistance of *exterior wall* assemblies, including the *exterior wall covering* assembly or only the *water-resistive barrier* system, shall be permitted to be tested in accordance with ASTM E331 to demonstrate compliance with the weather protection requirements of Section 1402.2. The following test conditions shall apply:

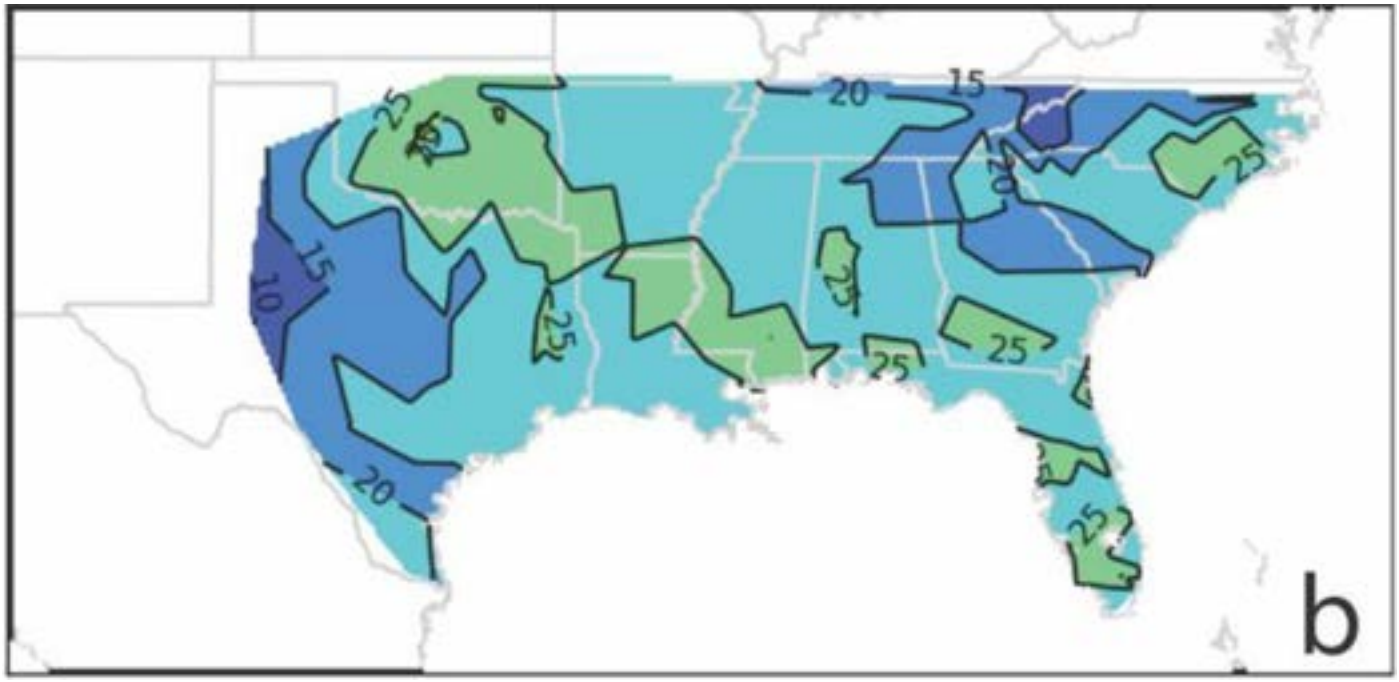
1. The ASTM E331 test pressure shall be determined in accordance with Table 1402.3 and Figure 1402.3 or by calculations in accordance with ASCE 7 using a design wind-driven rain wind speed in accordance with Figure 1402.3. The test pressure shall not be less than 2.86 psf (137 Pa) and shall not be required to exceed 12.0 psf (575 Pa).
2. The duration of test shall not be less than 15 minutes. Subsequent tests with increased test pressure shall be permitted with leakage assessment after each test.

3. The tested assembly shall be considered to resist wind-driven rain at the greatest test pressure increment where water did not penetrate the innermost layer intended to provide water resistance protection of the remainder of the wall assembly.
4. Test assemblies shall be constructed in accordance with the applicable manufacturer's installation instructions for each component and shall comply with the following minimum assembly configuration requirements:
   4.1. Not fewer than one opening element or blank, and flashing condition.
   4.2. Not fewer than one vertical and horizontal joint in the *water-resistive barrier* assembly where representative of installed conditions
   4.3. Where exterior *veneer* or cladding is included on the test assembly, it shall include not fewer than one control joint or transition joint as applicable and the results shall be limited to the type of *veneer* or cladding used.
   4.4. Test assemblies shall not be less than 4 feet by 8 feet (1.2 m by 2.4 m) in size.

Revise as follows:

[BS] 1402.4 ~~1402.3~~ Wind resistance. *Exterior walls*, exterior wall coverings, exterior soffits and fascias, and the associated openings, shall be designed and constructed to resist safely the superimposed *loads* required by Chapter 16.

Add new text as follows:



Source: Cornell University / NOAA - ***to be replaced with full U.S. map with smoothed wind speed contours and units of MPH instead of m/s.***

FIGURE 1402.3 Wind-driven rain wind speed (m/s) hazard map to determine ASTM E331 test pressure criteria [1 m/s = 2.24 mph]

TABLE 1402.3 Pre-calculated Wind-Driven Rain ASTM E331 Test Pressure (PSF)

Wind Exposure	Mean Roof Height (ft)	Wind-driven Rain Wind Speed, m/s (MPH)						
		10 (22.4)	15 (33.6)	20 (44.8)	25 (56.0)	30 (67.2)	35 (78.4)	40 (89.6)

B	15	2.86	2.86	3.46	5.40	7.78	10.6	12.0
	20	2.86	2.86	3.76	5.87	8.46	11.5	12.0
	25	2.86	2.86	4.00	6.25	9.00	12.0	12.0
	30	2.86	2.86	4.24	6.63	9.55	12.0	12.0
	40	2.86	2.86	4.61	7.20	10.4	12.0	12.0
	50	2.86	2.86	4.91	7.67	11.0	12.0	12.0
	60	2.86	2.90	5.15	8.05	11.6	12.0	12.0
C	15	2.86	2.90	5.15	8.05	11.6	12.0	12.0
	20	2.86	3.07	5.46	8.53	12.0	12.0	12.0
	25	2.86	3.21	5.70	8.90	12.0	12.0	12.0
	30	2.86	3.34	5.94	9.28	12.0	12.0	12.0
	40	2.86	3.55	6.31	9.85	12.0	12.0	12.0
	50	2.86	3.72	6.61	10.3	12.0	12.0	12.0
	60	2.86	3.85	6.85	10.7	12.0	12.0	12.0
D	15	2.86	3.51	6.24	9.8	12.0	12.0	12.0
	20	2.86	3.68	6.55	10.2	12.0	12.0	12.0
	25	2.86	3.82	6.79	10.6	12.0	12.0	12.0
	30	2.86	3.96	7.03	11.0	12.0	12.0	12.0
	40	2.86	4.16	7.40	11.6	12.0	12.0	12.0
	50	2.86	4.33	7.70	12.0	12.0	12.0	12.0
	60	2.86	4.47	7.94	12.0	12.0	12.0	12.0

For SI: 1 psf = 47.9 Pa

Reason: The code lacks a risk-consistent basis for addressing wind-driven rain and resistance to water intrusion. This proposal provides a wind-driven rain hazard map (Figure 1402.3) that properly characterizes the hazard as it varies across wind-driven rain climatology of the U.S. This map of the southeastern U.S. is a placeholder until a map of the entire U.S. becomes available in 2024.

The proposal “permits” and does not mandate use of proposed Section 1402.3, the wind-driven rain map of Figure 1402.3, or the associated ASTM E331 test pressures of Table 1402.3. Instead, the reference to Section 1402.3 in Section 1402.2 uses permissive language (“shall be permitted”) to allow for current practice to continue unchanged for existing materials and methods recognized in the code. This optional or voluntary approach will allow time for various stake-holders and standards developers to align their standards with this new risk-based approach without changing requirements for materials and methods currently recognized in the code at this time.

Various portions and details of this proposal are further explained below.

Figure 1402.3

– As reported in the Bibliography reference, the climatology of wind-driven rain is developed from recently available 1-min weather observations from National Weather Service Automated Surface Observing Systems (ASOS). One-minute data better represent the joint occurrence of the extremes that define wind-driven rain occurrence than hourly data, which previously was the shortest available temporal resolution. After adjusting the winds speeds to standardize for exposure and anemometer type, the wind data corresponding to

specific rainfall thresholds were fit to a statistical distribution to obtain estimates of the recurrence of wind speeds associated with different rainfall intensities. The values serve as the basis for a wind-driven rain climatology for the United States that is analogous to climatologies that exist and inform building codes in Europe and Canada. The wind-driven rain map shown in Figure 1402.3 is based on the currently completed research for the southeastern U.S. and represents a 3-sec gust wind speed (meters per second) for a 10-yr mean recurrence interval with a threshold coincidental rainfall rate of 2.54 mm/min (see JAMC article referenced in Bibliography). It is anticipated that research to complete a similar map for the entire U.S. (at an appropriate return period wind speed and threshold for coincidental rainfall rate) will be completed prior to the second committee hearing in 2024.

Section 1402.3 & Table 1402.3

– The test procedure and requirements used in proposed new Section 1402.3 rely on a standard test method commonly used for assessing wind-driven rain resistance, ASTM E331. While similar to testing requirements in Exception 2 of Section 1402.2, the application of Section 1402.3 is not limited to evaluation of “barrier claddings” that lack a means of drainage. The main purpose of the mapped wind-driven rain hazard (Figure 1402.3) is to provide a wind-driven rain wind speed from which an appropriate, risk-consistent test pressure can be used to evaluate the water-resistance of wall assemblies and exterior wall covering assemblies or components using ASTM E331. The test pressure may be determined in two ways. One way is to use the prescriptive (pre-calculated) test pressures in Table 1402.3. The other way is to calculate the test pressure using the ASCE 7 provisions for wind loads, but substituting the appropriate wind-driven rain wind speed from Figure 1402.3 for the basic wind speed used for structural design purposes in ASCE 7. The latter method was how Table 1402.3 was generated. An example of calculating the test pressure using Figure 1402.3 and the wind load provisions of ASCE 7 is as follows:

Wind-driven rain wind speed: 44.8 mph (20 m/s – Figure 1402.3)

Wind Exposure: B (suburban/wooded)

Building Height: 30 feet

Wall Pressure coefficients – GCp = 1.0 (positive); GCpi = -0.18 (negative internal pressure)

Kz = 0.7 (exposure B, 30’ height)

Kd = 1.0 (directionality not considered)

Kzt = 1.0 (no topographic wind speed up effects considered)

Ke = 1.0 (no elevation effects considered w/r to lower density of air at higher elevations)

$p = [0.00256\ Kz\ Kzt\ Kd\ Ke\ V^2] \times [GCp - GCpi]$

$= 0.00256(0.7)(1.0)(1.0)(1.0)(44.8)^2 \times [1.0 + 0.18]$

= (3.6 psf) x [1.18] = **4.24 psf** test pressure

The above calculation method was used to develop Table 1402.3 as shown also in the table below. This table is provided for transparency and informational purposes.

	Mean			WDR Wind Speed, m/s (MPH)							
Wind	Roof	10	15	20	25	30	35	40	45	50	60
Exposure	Height (ft)	22.4	33.6	44.8	56	67.2	78.4	89.6	100.8	112	134.4
	15	0.86	1.94	3.46	5.40	7.78	10.58	13.82	17.50	21.60	31.10
	20	0.94	2.11	3.76	5.87	8.46	11.51	15.04	19.03	23.49	33.83
	25	1.00	2.25	4.00	6.25	9.00	12.25	16.01	20.26	25.01	36.01
B	30	1.06	2.39	4.24	6.63	9.55	13.00	16.98	21.49	26.53	38.20
	40	1.15	2.59	4.61	7.20	10.37	14.11	18.43	23.33	28.80	41.47
	50	1.23	2.76	4.91	7.67	11.05	15.04	19.64	24.86	30.69	44.20
	60	1.29	2.90	5.15	8.05	11.60	15.78	20.61	26.09	32.21	46.38
	15	1.29	2.90	5.15	8.05	11.60	15.78	20.61	26.09	32.21	46.38
	20	1.36	3.07	5.46	8.53	12.28	16.71	21.83	27.62	34.10	49.11
	25	1.42	3.21	5.70	8.90	12.82	17.45	22.80	28.85	35.62	51.29
C	30	1.49	3.34	5.94	9.28	13.37	18.20	23.77	30.08	37.14	53.47
	40	1.58	3.55	6.31	9.85	14.19	19.31	25.22	31.92	39.41	56.75
	50	1.65	3.72	6.61	10.33	14.87	20.24	26.43	33.46	41.30	59.48
	60	1.71	3.85	6.85	10.70	15.41	20.98	27.40	34.68	42.82	61.66
	15	1.56	3.51	6.24	9.76	14.05	19.12	24.98	31.61	39.03	56.20
	20	1.64	3.68	6.55	10.23	14.73	20.05	26.19	33.15	40.92	58.93
	25	1.70	3.82	6.79	10.61	15.28	20.80	27.16	34.38	42.44	61.11
D	30	1.76	3.96	7.03	10.99	15.82	21.54	28.13	35.60	43.96	63.30
	40	1.85	4.16	7.40	11.56	16.64	22.65	29.59	37.45	46.23	66.57
	50	1.92	4.33	7.70	12.03	17.32	23.58	30.80	38.98	48.12	69.30
	60	1.99	4.47	7.94	12.41	17.87	24.32	31.77	40.21	49.64	71.48

It is important to note that the failure mode that this proposal addresses is the initiation of a leak (water intrusion) at a specified extreme event level. Therefore, it provides protection for routine and lesser extreme events that have equal or lower wind-driven rain wind speed (even if the rainfall rate is substantially greater than the threshold used to develop Figure 1402.3). Events that exceed the wind-driven rain wind speed and given recurrence interval (return period or annual extreme probability) tend to have lower coincidental rainfall rates as based on the natural tendency in the climatological data (see JAMC article referenced in Bibliography).

Finally, as indicated in Section 1402.3 (Item 1) and shown in Table 1402.3, the lower limit of 2.86 psf (137 Pa) for test pressure is used to correspond with the minimum test pressure specified in ASTM E331 (despite the table above showing that lower pressure could be justified in regions of low wind-driven rain hazard). The upper limit of 12.0 psf (575 Pa) in Table 1402.3 also is based on current accepted practice for worst-case wind-driven rain climate conditions in the U.S. and ensures the availability of solutions (it also ensures equivalency with current accepted practices for regions or conditions considered to have high wind-driven rain hazard). These limits ensure that this new approach is “calibrated” to accepted practice and that solutions are available while also better aligning solutions with actual variation in U.S. wind-driven rain hazard. Even so, the 12 psf cap will provide substantial protection against significant water-intrusion and contents damage in greater wind-driven rain hazard conditions or events (higher wind speed at greater return periods) up to the point where structural failures begin to occur and the general integrity of the building envelope is compromised. Such extreme structural safety-level events are beyond the scope of a serviceability concern underlying the current and proposed approach to water resistance. Regardless, the proposed approach deals with the matter of wind-driven rain water resistance in a much more risk-consistent fashion based on the variation in hazard across the U.S. (wind-driven rain wind speed) and for different building conditions (e.g., wind exposure and building height).

Bibliography: Belcher, B.N., DeGaetano, A.T., Masters, F.J., Crandell, J., and Morrison, M.J. (2023). Development of an Extreme Wind-Driven Rain Climatology for the Southeastern United States Using 1-Min Rainfall and Peak Wind Speed Data. *Journal of Applied Meteorology and Climatology*, American Meteorological Society, DOI: https://doi.org/10.1175/JAMC-D-22-0156.1

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

Estimated Immediate Cost Impact:

$0.00

While the cost impact indicates “increased cost” (there was no suitable default answer in cdpACCESS), the proposal does not mandate any new requirements. It provides a new means or option to evaluate building wall assemblies and components for water resistance using an improved methodology based on actual wind-driven rain hazard. If voluntarily used, it could result in an increase or decrease cost for material or assembly qualification purposes relative to existing practices. But, the increase or decrease in cost to the end user may be very small. This proposal also does not require any existing materials or methods recognized in the code to alter current

requirements, methods, or standards. So, it should be considered cost neutral.

Estimated Immediate Cost Impact Justification (methodology and variables):

Zero

Estimated Life Cycle Cost Impact:

Zero

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

See cost impact statement.

FS98-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 12-0).

FS98-24

Individual Consideration Agenda

Comment 1:

IBC: 1402.3

Proponents: Jay Crandell, P.E., ABTG / ARES Consulting, myself (jcrandell@aresconsulting.biz) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

1402.3 Rainwater resistance.. The rainwater resistance of *exterior wall* assemblies, including the *exterior wall covering* assembly or only the *water-resistive barrier* system, shall be permitted to be tested in accordance with ASTM E331 to demonstrate compliance with the weather protection requirements of Section 1402.2. The following test conditions shall apply:

1. The ASTM E331 test pressure shall be determined in accordance with Table 1402.3 and Figure 1402.3 or by calculations in accordance with ASCE 7 using a design wind-driven rain wind speed in accordance with Figure 1402.3 or an *approved source*. The test pressure shall not be less than 2.86 psf (137 Pa) and shall not be required to exceed 12.0 psf (575 Pa).
2. The duration of test shall not be less than 15 minutes. Subsequent tests with increased test pressure shall be permitted with leakage assessment after each test.
3. The tested assembly shall be considered to resist wind-driven rain at the greatest test pressure increment where water did not penetrate the innermost layer intended to provide water resistance protection of the remainder of the wall assembly.

4. Test assemblies shall be constructed in accordance with the applicable manufacturer's installation instructions for each component and shall comply with the following minimum assembly configuration requirements:
    4.1. Not fewer than one opening element or blank, and flashing condition.
    4.2. Not fewer than one vertical and horizontal joint in the *water-resistive barrier* assembly where representative of installed conditions
    4.3. Where exterior *veneer* or cladding is included on the test assembly, it shall include not fewer than one control joint or transition joint as applicable and the results shall be limited to the type of *veneer* or cladding used.
    4.4. Test assemblies shall not be less than 4 feet by 8 feet (1.2 m by 2.4 m) in size.

Reason: This proposal was disapproved at CAH#1 at the request of the proponent to allow time for additional work on the wind-drive rain map (Figure 1402.3) to be completed. This modified proposal provides flexibility to use an "approved source" in lieu of the mapped wind-driven rain wind speeds of proposed Figure 1402.3 given its limited scope of the southeastern U.S. Otherwise the proposal is unchanged. The intent remains to replace the southeastern US map in Figure 1402.3 with a full US map, but the NOAA-funded research at Cornell University was not completed in time for this comment submission. Therefore, the map replacement may occur as a modification during CAH#2. If not, it will be addressed during the public comment phase.

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

Justification for no cost impact:

This proposed modification to FS98-24 only adds the option to use an "approved source" as an alternative to the mapped wind-driven rain wind speed data. This is editorial in nature and has no cost impact. For the overall proposal's cost impact, refer to the originally submitted proposal cost impact statement which remains applicable. The overall proposal is considered to be "cost neutral" because it is providing an option, not a new requirement that changes any existing requirements.

Comment (CAH2)# 364

FS101-24

IBC: 1402.5, 1402.5.1, 1402.5.2, 1402.5.3, 1402.5.4, 1402.5.5, 1402.5.6 (New)

Proposed Change as Submitted

Proponents: Theresa Weston, The Holt Weston Consultancy, Rainscreen Association in North America (holtweston88@gmail.com)

2024 International Building Code

Revise as follows:

1402.5 Vertical and lateral flame propagation. *Exterior walls* on *buildings* of Type I, II, III and IV construction that contain a combustible *exterior wall covering*, combustible insulation or a combustible *water-resistive barrier* shall comply with Sections 1402.5.1 through ~~1402.5.5~~ 1402.5.6, as applicable. Where compliance with NFPA 285 and associated acceptance criteria is required in Sections 1402.5.1 through ~~1402.5.5~~ 1402.5.6, the *exterior wall assembly* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

1402.5.1 Combustible water-resistive barrier. *Exterior walls* containing a combustible *water-resistive barrier* shall comply with Section 1402.6.

1402.5.2 Metal composite material (MCM) . *Exterior walls* containing metal composite material (MCM) systems shall comply with Section 1406.

1402.5.3 Exterior insulation and finish system (EIFS) . *Exterior walls* containing an exterior insulation and finish system (EIFS) shall comply with Section 1407.

1402.5.4 High-pressure decorative exterior-grade compact laminate (HPL) system . *Exterior walls* containing a high-pressure decorative exterior-grade compact laminate (HPL) system shall comply with Section 1408.

1402.5.5 Foam plastic insulation. *Exterior walls* containing *foam plastic insulation* shall comply with Section 2603.

Add new text as follows:

1402.5.6 Fiber-Reinforced Polymer. *Exterior Walls* containing *fiber-reinforced polymer* shall comply with Section 2613.

Reason: This proposal completes the list of pointers added in the last code change cycle. Section 2613.5 contains requirements for fiber-reinforced polymer materials used in exterior walls and further links to NFPA285 testing requirements. The inclusion of pointers was accepted in the last cycle as it "assists users of the Code by providing reference to all the relevant sections of Chapter 14 and Chapter 26 containing specific requirements for exterior wall assemblies needing testing to NFPA 285" (as stated in the 2021 Report of the Committee Action Hearings on the 2021 Editions of the Group A International Codes" Item FS122-21). This proposal has the same purpose of assisting users of the Code.

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

Justification for no cost impact:

This proposal does not change requirements but only provides a pointer to existing requirements to aid the user of the code.

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee deemed that the proposed code change is necessary to clarify the technical requirements. The committee also indicated that the proposal is a good first step (Vote: 10-2).

FS101-24

Individual Consideration Agenda

Comment 1:

IBC: 1402.5.6

Proponents: Stephen Szoke, American Concrete Institute, American Concrete Institute (steve.szoke@concrete.org); Stephen Skalko, Stephen V. Skalko, P.E. & Associates LLC, Masonry Alliance for Codes and Standards (svskalko@svskalko-pe.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

1402.5.6 Fiber-Reinforced Polymer. Exterior Walls containing fiber-reinforced polymer shall comply with Section 2613.

Exception: Exterior walls where the only FRP is fiber reinforced polymer reinforcing bars embedded in concrete in accordance with Section 1901.2.1 or masonry in accordance with Section 2101.2.

Reason: Exempts testing of concrete and masonry internally reinforced with FRP reinforcing bars. This modification clarifies the intent of the current code provisions provided for concrete or masonry cover in Section 2603.5.7 and 20% aggregate area exception in Section 2613.5. The revised language simplifies code compliance without directing the user to seek out exceptions and interpret criteria in multiple sections of Chapter 26.

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

Justification for no cost impact:

Clarifies code and simplifies compliance by placing exemption in initial charging language.

Comment (CAH2)# 393

FS103-24

IBC: 1402.6

Proposed Change as Submitted

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

2024 International Building Code

Revise as follows:

1402.6 Water-resistive barriers. *Exterior walls* on *buildings* of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above *grade plane* and contain a combustible *water-resistive barrier* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.Combustibility shall be determined in accordance with Section 703.3. For the purposes of this section, *fenestration* products, flashing of *fenestration* products and *water-resistive-barrier* flashing and accessories at other locations, including through wall flashings, shall not be considered part of the *water-resistive barrier*. **Exceptions:**

1. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has an *exterior wall* covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1404.2.
2. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* complies with the following:
   2.1 A peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg when tested on specimens at the thickness intended for use, in accordance with ASTM E1354, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.
   2.2 A *flame spread* index of 25 or less and a *smoke-developed index* of 450 or less as determined in accordance with ASTM E84 or UL 723, with test specimen preparation and mounting in accordance with ASTM E2404.
3. Walls constructed of *fire-retardant-treated wood* complying with Section 2303.2 and tested in accordance with and comply with the acceptance criteria of NFPA 285, and the *water-resistive barrier* complies with either Exception 1 or Exception 2.

Reason: Building cladding fires, such as the Grenfell Tower fire in London, UK, have prompted review of the application of the NFPA 285 test standard to identify potential existing conflicts and areas of needed improvement or clarification. Section 1402.5 appears to create a conflict resulting in significant industry confusion regarding the use of fire-retardant-treated wood (FRTW) in Types I, II, III, & IV construction as allowed by Section 602 and 603. This section suggests that FRTW cannot be used with a NFPA 285-compliant water-resistive barrier beyond 40 feet in height. The code currently allows FRTW used in Type III construction to extend to 85 feet in height. As FRTW does not meet the definition of “noncombustible” per Section 703.5, exceptions 1 and 2 cannot be applied. This change provides for the needed clarification to permit FRTW to be used as permitted in Section 602 and 603 in conjunction with a NFPA 285 compliant water-resistive barrier.

One of the arguments from the last code cycle was that the industry wanted this exception because they cannot pass NFPA 285. However, recent tests have resulted in a UL exterior wall system (UL-EWS0045) for an FRTW lumber and plywood assembly with two weather-resistive barrier options demonstrating compliance with NFPA 285.

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

Estimated Immediate Cost Impact:

There is a potential for construction savings where FRTW use was denied due to existence of a combustible water-resistive barrier.

A cost decrease of $27.46 per square foot is possible in an R-2 Occupancy if Type IIIA Construction can be used in lieu of Type IIA Construction. See the August 2023 ICC Building Valuation Data where an R-2 Occupancy of Type IIIA Construction has a square foot construction cost $175.96 and an R-2 Occupancy of Type IIA Construction has a square foot construction cost of $203.42.

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Estimated Immediate Cost Impact Justification (methodology and variables):

Fire-retardant-treated wood is generally less expensive than noncombustible materials. Because FRTW may be used as an alternate to these materials, the cost may be less.

FS103-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 11-0).

FS103-24

Individual Consideration Agenda

Comment 1:

IBC: 1402.6

Proponents: David Bueche, Hoover Treated Wood Products, Hoover Treated Wood Products (dbueche@frtw.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

1402.6 Water-resistive barriers. *Exterior walls* on *buildings* of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above *grade plane* and contain a combustible *water-resistive barrier* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.Combustibility shall be determined in accordance with Section 703.3. For the purposes of this section, *fenestration* products, flashing of *fenestration* products and *water-resistive-barrier* flashing and accessories at other locations, including through wall flashings, shall not be considered part of the *water-resistive barrier*. **Exceptions:**

1. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has an *exterior wall* covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1404.2.
2. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* complies with the following:
   2.1 A peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg when tested on specimens at the thickness intended for use, in accordance with ASTM E1354, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.
   2.2 A *flame spread* index of 25 or less and a *smoke-developed index* of 450 or less as determined in accordance with ASTM E84 or UL 723, with test specimen preparation and mounting in accordance with ASTM E2404.
3. Exterior ~~Walls~~ walls constructed of *fire-retardant-treated wood* complying with Section 2303.2 and which have been tested ~~in accordance~~ with and comply with the acceptance criteria of NFPA 285~~,~~ and the *water-resistive barrier* complies with ~~either~~ the ~~Exception 1 or~~ Exception 2 criteria.

Reason: This comment addresses concerns the water-resistive barrier industry had with the original proposal.

Building cladding fires, such as the Grenfell Tower fire in London, UK, have prompted review of the application of the NFPA 285 test standard to identify potential existing conflicts and areas of needed improvement or clarification. Section 1402.5 appears to create a conflict resulting in significant industry confusion regarding the use of fire-retardant-treated wood (FRTW) in Types I, II, III, & IV construction as allowed by Section 602 and 603. This section suggests that FRTW cannot be used with a NFPA 285-compliant water-resistive barrier beyond 40 feet in height. The code currently allows FRTW used in Type III construction to extend to 85 feet in height. As FRTW does not meet the definition of “noncombustible” per Section 703.5, exceptions 1 and 2 cannot be applied. This change provides for the needed clarification to permit FRTW to be used as permitted in Section 602 and 603 in conjunction with a NFPA 285 compliant water-resistive barrier.

One of the arguments from the last code cycle was that the industry wanted this exception because they cannot pass NFPA 285. However, recent tests have resulted in a UL exterior wall system (UL-EWS0045) for an FRTW lumber and plywood assembly with two water-resistive barrier options demonstrating compliance with NFPA 285.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

There is a potential for construction savings where FRTW use was denied due to existence of a combustible water-resistive barrier. A cost decrease of $27.46 per square foot is possible in an R-2 Occupancy if Type IIIA Construction can be used in lieu of Type IIA Construction. See the August 2023 ICC Building Valuation Data where an R-2 Occupancy of Type IIIA Construction has a square foot construction cost $175.96 and an R-2 Occupancy of Type IIA Construction has a square foot construction cost of $203.42.

Estimated Immediate Cost Impact Justification (methodology and variables):

Fire-retardant-treated wood is generally less expensive than noncombustible materials. Because FRTW may be used as an alternate to these materials, the cost may be less.

Comment (CAH2)# 621

FS104-24

IBC: 1402.6, 2603.5.7

Proposed Change as Submitted

Proponents: Alexander Haldeman, James Hardie Building Products, James Hardie Building Products (alex.haldeman@jameshardie.com)

2024 International Building Code

Revise as follows:

1402.6 Water-resistive barriers. *Exterior walls* on *buildings* of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above *grade plane* and contain a combustible *water-resistive barrier* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.Combustibility shall be determined in accordance with Section 703.3. For the purposes of this section, *fenestration* products, flashing of *fenestration* products and *water-resistive-barrier* flashing and accessories at other locations, including through wall flashings, shall not be considered part of the *water-resistive barrier*. **Exceptions:**

1. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has an *exterior wall* covering of brick, concrete, stone, terra cotta, stucco, ~~or~~ steel or fiber-cement with minimum thicknesses in accordance with Table 1404.2.
2. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* complies with the following:
   2.1 A peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg when tested on specimens at the thickness intended for use, in accordance with ASTM E1354, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.
   2.2 A *flame spread* index of 25 or less and a *smoke-developed index* of 450 or less as determined in accordance with ASTM E84 or UL 723, with test specimen preparation and mounting in accordance with ASTM E2404.

2603.5.7 Ignition. *Exterior walls* shall not exhibit sustained flaming where tested in accordance with NFPA 268. Where a material is intended to be installed in more than one thickness, tests of the minimum and maximum thickness intended for use shall be performed.

Exception: Assemblies protected on the outside with one of the following:

1. A thermal barrier complying with Section 2603.4.
2. A minimum 1-inch (25 mm) thickness of concrete or *masonry*.
3. Glass-fiber-reinforced concrete panels of a minimum thickness of $^3/_8$ inch (9.5 mm).
4. Metal-faced panels having minimum 0.019-inch-thick (0.48 mm) aluminum or 0.016-inch-thick (0.41 mm) corrosion-resistant steel outer facings.
5. A minimum $^7/_8$-inch (22.2 mm) thickness of stucco complying with Section 2510.
6. A minimum $^1/_4$-inch (6.4 mm) thickness of *fiber-cement* lap, panel or shingle siding complying with Section 1404.17 and Section 1404.17.1 or 1404.17.2.

Reason: This change proposal is editorial in nature, and harmonizes materials listed in section 1402.6 with those listed in 2603.5.7

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

Justification for no cost impact:

This proposal provides harmonization of materials listed as exceptions. No additional requirements are being added.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 12-0).

FS104-24

Individual Consideration Agenda

Comment 1:

IBC: 1402.6

Proponents: Alexander Haldeman, James Hardie Building Products, James Hardie Building Products (alex.haldeman@jameshardie.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

Revise as follows:

1402.6 Water-resistive barriers. *Exterior walls* on *buildings* of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above *grade plane* and contain a combustible *water-resistive barrier* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.Combustibility shall be determined in accordance with Section 703.3. For the purposes of this section, *fenestration* products, flashing of *fenestration* products and *water-resistive-barrier* flashing and accessories at other locations, including through wall flashings, shall not be considered part of the *water-resistive barrier*. **Exceptions:**

1. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has ~~a~~n noncombustible *exterior wall* covering of brick, concrete, stone, terra cotta, stucco, steel or fiber-cement with minimum thicknesses in accordance with Table 1404.2.
2. *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* complies with the following:
   2.1 A peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg when tested on specimens at the thickness intended for use, in accordance with ASTM E1354, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.
   2.2 A *flame spread* index of 25 or less and a *smoke-developed index* of 450 or less as determined in accordance with ASTM E84 or UL 723, with test specimen preparation and mounting in accordance with ASTM E2404.

Reason: During CAH1, this proposal was requested to be disapproved due to concerns from stakeholders prior to the hearing regarding the noncombustibility of materials listed within.

This clarification to the original proposal is the result of working with with various stakeholders, and clarifies that all materials listed must be noncombustible; addressing concerns that not all materials listed in all forms necessarily passes ASTM E136 criteria using methods E136 or E2652 due to potential addition of organic / combustible ingredients such as foaming agents or fibers which would result in a

failed test.

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

Justification for no cost impact:

This proposal is clarifying in nature and will not result in cost impacts.

Comment (CAH2)# 357

FS108-24

IBC: 1403.2, 1403.2.1 (New), 1705.21 (New)

Proposed Change as Submitted

Proponents: Theresa Weston, The Holt Weston Consultancy, Air Barrier Association of America (ABAA) (holtweston88@gmail.com)

2024 International Building Code

1403.2 Water-resistive barrier. Not fewer than one layer of *water-resistive barrier* material shall be attached to the studs or sheathing, with flashing as described in Section 1404.4, in such a manner as to provide a continuous *water-resistive barrier* behind the exterior wall *veneer*. The intersection between the *water-resistive barrier* material and fenestration openings shall be flashed and assembled in accordance with the fenestration manufacturer's installation instructions, or other *approved* methods for applications not addressed by the fenestration manufacturer's instructions. The water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and *building* appendages in a manner to meet the requirements of the exterior wall envelope as described in Section 1402.2.
Water-resistive barriers shall comply with one of the following:

1. No. 15 felt complying with ASTM D226, Type 1.
2. ASTM E2556, Type I or II.
3. Foam plastic insulating sheathing *water-resistive barrier* systems complying with Section 1402.2 and installed in accordance with manufacturer's installation instructions.
4. ASTM E331 in accordance with Section 1402.2.
5. Other *approved* materials installed in accordance with the manufacturer's installation instructions.

No. 15 asphalt felt and water-resistive barriers complying with ASTM E2556 shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, the upper and lower layer shall be lapped not less than 6 inches (152 mm).

Add new text as follows:

1403.2.1 Special inspections. The installation of the *water-resistive barrier* shall comply with the provisions of Sections 1704.2 and 1705.21.

1705.21 Water-resistive barrier Installation. *Special inspections* shall be required for the installation of the *water-resistive barrier* and the intersection of the *water-resistive barrier* with flashing in accordance with Sections 1403.2.

Reason: It is estimated that 70% of construction claims are due to water and moisture issues in the enclosure. [2,5] According to a recent report on building enclosure damage, "Water intrusion... .dreaded by homeowners, contractors, and insurance adjusters alike. It is evident why, as it ranks as the second most common cause for property insurance claims and first for the most expensive type of claim. In addition, water intrusion accounts for 70% of construction litigation. On average, each incident costs $11,098; collectively, water intrusion costs over $20 billion annually throughout the United States.[6] Furthermore, data suggests these water intrusion issues are a result of incorrect installation:

- A survey of "top 100" general contracting firms found the "53% of all defects of defects originate from poor workmanship, supervision and inspection of trade contractors during construction." [2]
- A third party quality assurance inspection firm lists several defects in water-resistive barrier and flashing integration among the "top 10 construction defects observed across the U.S. in 2018." [3]

This proposal seeks to reduce water intrusion issues resulting from incorrect installation of the water-resistive barrier and/or integration of flashings with the water-resistive barrier through requiring a special inspection of water-resistive barrier installation.

It should be noted that EIFS and EIFS water-resistive barriers already are subject to special inspections.

Bibliography:

1. ABAA, Air Barrier Quality Assurance Program, https://www.airbarrier.org/qap-overview/
2. Grosskopf, K. R. and D. E. Lucas, "Identifying the Causes of Moisture-Related Defect Litigation in U. S. Building Construction", COBRA 2008 – The Construction and Building Research Conference of the Royal Institution of Chartered Surveyors, Dublin, Sept 4-5, 2008
3. Hoch, Jeff, "The Top 10 Construction Defects Observed Across the U.S. in 2018, QualityBuilt, March 12, 2019; https://www.qualitybuilt.com/resources/top-10-construction-defects-2018/
4. Report of the Barrett Commission of Inquiry into the Quality of Condominium Construction in British Columbia, Vancouver BC, 1998.
5. Stroik, Brian, "Mock-ups: The Crash Test Dummy for Building Enclosures'" ABAA Conference, Norfolk, VA, March 26-27 2019. https://www.abaaconference.com/wp-content/uploads/2019/04/Mock-Ups-The-Crash-Test-Dummy-for-Building-Enclosures-Brian-Stroik.pdf
6. Swart, Amelia, "Damage Report: Water Intrusion", Forum Forensics, September 20, 2022, https://www.forumforensics.com/blog/damage-report-water-intrusion

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

Estimated Immediate Cost Impact:

$.20 to .40 per square foot of opaque wall area.

Estimated Immediate Cost Impact Justification (methodology and variables):

This estimate was based on the cost of quality audits reported by the Air Barrier Association of America [1] and is likely a high estimate as an air barrier quality audit would cover more items than a special inspection of the water-resistive barrier and flashing alone. The increased immediate cost needs to be weighed against the liability for potential water intrusion damage if the water-resistive barrier and flashing are not installed correctly. Experience has shown that because of the relative inaccessibility of the water management components in the building enclosures, rebuilding a wall system can cost twice as much as the original wall cost per sq. ft. [4]

FS108-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee deemed that the proposed code change is needed but the language needs to be developed. The committee indicated that inspection and installation need to be addressed in detail (Vote: 9-3).

FS108-24

Individual Consideration Agenda

Comment 1:

IBC: 1403.2.1, TABLE 1403.2 (New), 1705.21

Proponents: Theresa Weston, The Holt Weston Consultancy, Air Barrier Association of America (ABAA) (holtweston88@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

1403.2.1 Special inspections. Not less than one *special inspection* shall be required for the installation of the water-resistive barrier and the intersection of the water-resistive barrier with flashing in accordance with Table 1403.2.The *special inspection* of the installation of the *water-resistive barrier* shall comply with the provisions of Sections 1704.2 and 1705.21. A statement of special inspections shall be included in the construction documents in accordance with Section 107.1 and shall include the proposed inspection schedule, the list of inspection items, and inspection documentation to provided.The periodic inspection shall be conducted during construction while the water-resistive barrier is still accessible for inspection and repair.

Add new text as follows:

TABLE 1403.2 REQUIRED SPECIAL INSPECTIONS FOR *WATER-RESISTIVE BARRIER* INSTALLATION

***WATER-RESISTIVE BARRIER* TYPE**		**INSPECTION ITEM**
All *water-resistive barriers*		Verify the *water-resistive barrier* is continuous to the top of walls.
		Verify the *water-resistive barrier* is integrated with flashing installed at wall and roof intersections as described in section 1503.2
		Verify the *water-resistive barrier* is terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section 1402.2 and is integrated with flashings in accordance with Section 1404.4
Applicable to specific types of *water-resistive barriers.*	No 15 felt, and *water-resistive barriers* complying with ASTM E2556	Verify the *water-resistive barrier* is applied shingle fashion with the upper layer lapped over the lower layer not less than 2 inches (51 mm).
		Verify vertical joints in the *water-resistive barrier* sheets are lapped not less than 6 inches (152 mm)
	Foam plastic insulating sheathing *water-resistive barriers* systems	Verify installation in accordance with manufacturer's installation instructions.
	Water-resistive barrier approved through ASTM E331 testing in accordance with Section 1402.2	Verify installation is in accordance with the installation specified in the testing report.
	Water-resistive barriers approved as alternative materials	Verify the *water-resistive barrier* is installed in accordance with the manufacturer's installation instructions.

1705.21 Water-resistive barrier Installation. *Special inspections* shall be required for the installation of the *water-resistive barrier* and the intersection of the *water-resistive barrier* with flashing in accordance with Section~~s 1403.2~~ 1403.2.1.

Reason: In the reason statement of disapproval of this proposal at the 1st Committee Hearing "the committee deemed code change is needed but the language needs to be developed". This comment provides modifications which develop the language relating to the inspection and installation needs. This comment also addresses questions which were raised during the testimony at the committee hearings.

To address **who** will perform the special inspections. Section 1704.2, referenced in both the original and modified proposals, contains the qualifications for the special inspector. It states "the *approved agencies* shall provide written documentation to the *building official* demonstrating competence and relevant experience or training of the *special inspectors* who will perform the *special inspections* and tests during constructions." It also states "The *registered design professional in responsible charge* and engineers of record involved in the design of the project are permitted to act as an *approved agency* and their personnel are permitted to act as *special inspectors* for the work designed by them, provided they qualify as *special inspectors*." In many cases, staff already engaged in oversight of the construction project will be eligible to conduct the *special inspection*. Another option would be to engage the services of a third party to conduct the special inspection. If the third party route was chosen there are several talent pools from which to draw, including:

- IIBEC: Which has 2200 + credentialed members, including a specific credential for Registered Exterior Wall Observer (https://iibec.org/credentials/)
- ABAA QAP Certified Auditors: Available across the US with providers located in 2/3 of the states (https://www.airbarrier.org/qap/)
- RESNET HERS Raters: There are 6203 active HERS raters active across America (https://www.resnet.us/raters/) and HERS raters are eligible for a joint IECC/HERS Compliance Specialist Designation (https://www.iccsafe.org/content/ecs-designation/)
- Finally there are over 10,579 Home Inspectors in US (https://www.zippia.com/home-inspector-jobs/demographics/), many of whom would have the ability to conduct *water-resistive barrier* installation inspection.

There are sufficient trained professionals available to conduct the proposed special inspections.

To address **how** the *special inspections* would be conducted. Modifications to the proposal in this comment provide more detail on the *special inspection* process. This process is based on existing code requirements and is consistent with other required *special inspections*. The process involves:

- The inclusion of the *water-resistive barrier* installation in the statement of *special inspection* in the construction documents as required in Section 107.1.The statement will include the proposed inspection schedule, the list of inspection items and inspection documentation.
- At least one periodic special inspection of the *water-resistive barrier* installation is required. The number of inspections would be dependent on the size and complexity of the building.
- The periodic inspection is conducted while the *water-resistive barrier* is accessible.

To address **what** characteristics of installation will be inspected. The modified proposal contains a table of inspection items which are based on the requirements in Sections 1403.2 and a survey of common errors in *water-resistive barrier* installation based on industry audit information, interviews with industry professionals, and internet searches.[2, 5, 7] The table aligns with requirements based on requirements for specific types of *water-resistive barriers* 1403.2.

The reason **why** this proposal, now modified, is needed was provided in the original proposal, but is repeated here for the reader's convenience:

It is estimated that 70% of construction claims are due to water and moisture issues in the enclosure. [3,8] According to a recent report on building enclosure damage, "Water intrusion... .dreaded by homeowners, contractors, and insurance adjusters alike. It is evident why, as it ranks as the second most common cause for property insurance claims and first for the most expensive type of claim. In addition, water intrusion accounts for 70% of construction litigation. On average, each incident costs $11,098; collectively, water intrusion costs over $20 billion annually throughout the United States.[9] Furthermore, data suggests these water intrusion issues are a result of incorrect installation:

- A survey of "top 100" general contracting firms found the "53% of all defects of defects originate from poor workmanship, supervision and inspection of trade contractors during construction." [3]
- A third party quality assurance inspection firm lists several defects in water-resistive barrier and flashing integration among the "top 10 construction defects observed across the U.S. in 2018." [4]

This proposal seeks to reduce water intrusion issues resulting from incorrect installation of the water-resistive barrier and/or integration of flashings with the water-resistive barrier through requiring a special inspection of water-resistive barrier installation.
It should be noted that EIFS and EIFS water-resistive barriers already are subject to special inspections.

Bibliography:

1. ABAA, Air Barrier Quality Assurance Program, https://www.airbarrier.org/qap-overview/
2. Easley, Steve, "Housewrap Errors", Residential Design, 2022; https://residentialdesignmagazine.com/housewrap-errors-2/
3. Grosskopf, K. R. and D. E. Lucas, “Identifying the Causes of Moisture-Related Defect Litigation in U. S. Building Construction”,COBRA 2008 – The Construction and Building Research Conference of the Royal Institution of Chartered Surveyors, Dublin, Sept4-5, 2008
4. Hoch, Jeff, “The Top 10 Construction Defects Observed Across the U.S. in 2018, QualityBuilt, March 12, 2019;https://www.qualitybuilt.com/resources/top-10-construction-defects-2018/
5. Quality Built Tech Alerts; https://www.qualitybuilt.com/resources/category/tech-alert/
6. Report of the Barrett Commission of Inquiry into the Quality of Condominium Construction in British Columbia, Vancouver BC, 1998.
7. Schaack, Karl, "Potential Issues Encountered During Installation of Air and Weather-Resistive Barriers, International Institute of Building Enclosure Consultants (IIBEC), 2020; https://iibec.org/issues-encountered-with-barriers/
8. Stroik, Brian, “Mock-ups: The Crash Test Dummy for Building Enclosures’” ABAA Conference, Norfolk, VA, March 26-27 2019.https://www.abaaconference.com/wp-content/uploads/2019/04/Mock-Ups-The-Crash-Test-Dummy-for-Building-Enclosures-Brian-Stroik.pdf
9. Swart, Amelia, “Damage Report: Water Intrusion”, Forum Forensics, September 20, 2022,

https://www.forumforensics.com/blog/damage-report-water-intrusion

Cost Impact: Increase

Estimated Immediate Cost Impact:

As stated in the original proposal, $.20 to .40 per square foot of opaque wall area is likely a high estimate.

Estimated Immediate Cost Impact Justification (methodology and variables):

The above estimate was based on the cost of quality audits reported by the Air Barrier Association of America [1] and is likely a high estimate as
an air barrier quality audit would cover more items than a special inspection of the water-resistive barrier and flashing alone. The increased immediate cost needs to be weighed against the liability for potential water intrusion damage if the water-resistive barrier and flashing are not installed correctly. Experience has shown that because of the relative inaccessibility of the water management components in the building enclosures, rebuilding a wall system can cost twice as much as the original wall cost per sq. ft. [6]

Comment (CAH2)# 366

FS112-24

IBC: 1403.15 (New), 1404.19 (New), 1404.19.1 (New), 1404.19.2 (New), 2605.4 (New), ASTM Chapter 35 (New)

Proposed Change as Submitted

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

2024 International Building Code

Add new text as follows:

1403.15 Plastic lumber or wood-plastic composite exterior wall covering materials. Where plastic lumber materials and wood-plastic composite materials are used as exterior wall coverings, such materials shall be *listed* and labeled in accordance with ASTM D8484 and shall be installed in accordance with the requirements of Section 1404.19 and the manufacturer's instructions. The materials shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1404.19 Plastic lumber or wood-plastic composite exterior wall covering materials. Plastic lumber materials and wood-plastic composite materials used as exterior wall coverings shall comply with this section and Section 1403.15.

1404.19.1 Design wind pressure 30 pounds per square foot or less. Plastic lumber and wood-plastic composite exterior wall coverings materials shall be limited to exterior walls located in areas where the design wind pressure determined in Section 1609 speed does not exceed 30 pounds per square foot (1.44 kN/m^2) except as provided for in 1404.19.2.

1404.19.2 Design wind pressure greater than 30 pounds per square foot. Where the design wind pressured determined in Section 1609 exceeds 30 pounds per square foot (1.44 kN/m^2), tests or calculations indicating compliance with Chapter 16 shall be submitted.

2605.4 Plastic lumber or wood-plastic composite exterior wall covering materials. Plastic lumber materials or wood-plastic composite materials used as exterior wall covering shall comply with Sections 1403 and 1404.

Add new standard(s) as follows:

ASTM

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

D8484-23	Standard Specification for Plastic Lumber Materials and Wood-Plastic Composite Materials Used as Exterior Wall Coverings

Reason: The IBC code includes requirements for a variety of materials that are used as exterior wall coverings, meaning as components of exterior wall assemblies. They include some plastic siding materials, such as vinyl siding and polypropylene siding. The code also includes requirements for the use of plastic composite materials (which are defined in the IBC as "A generic designation that refers to wood/plastic composites, plastic lumber and similar materials.") in "exterior deck boards, stair treads, handrails and guards" (section 1409), with the requirements shown in section 2612.

In recent years some plastic lumber materials and/or wood-plastic composite materials have been used as components of exterior wall assemblies. However, neither section 1403 (Materials) nor section 1404 (Installation of wall coverings) nor section 1405 (Combustible materials on the exterior side of exterior walls) discuss the requirements for plastic lumber materials or wood-plastic composite materials when used as exterior wall coverings, and clearly there needs to be a difference between the use of materials as deck boards (horizontally) and as exterior wall coverings (vertically).

ASTM has recently developed a specification (ASTM D8484, Standard Specification for Plastic Lumber Materials and Wood-Plastic Composite Materials Used as Exterior Wall Coverings) that contains all the appropriate requirements. The properties contained in ASTM D8484 include the following: conditioning, wind load resistance, linear thermal expansion, resistance to moisture and temperature effects, weatherability (resistance to UV0, freeze-thaw resistance, biodeterioration, flame spread index (testing to ASTM E84), ignitability (testing to NFPA 268), exterior to wall assembly fire performance (testing to NFPA 285, when required), and effect on fire resistance

rating (when required).

The requirements contained in ICC-ES AC524 (Wood-plastic Composite Products Used as Exterior Siding) formed the basis of the requirements contained in ASTM D8484.

This proposal recommends incorporating these materials specifically into the code, with reference to them meeting the requirements from ASTM D8484.

Some relevant existing code sections are shown below, for comparison.

1403.9 Vinyl siding. Vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D3679 by an *approved* quality control agency.

1404.14 Vinyl siding. Vinyl siding conforming to the requirements of this section and complying with ASTM D3679 shall be permitted on exterior walls where the design wind pressure determined in accordance with Section 1609 does not exceed 30 pounds per square foot (1.44 kN/m2). Where the design wind pressure exceeds 30 pounds per square foot (1.44 kN/m2), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1404.14.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform to the water-resistive barrier requirements in Section 1402. Siding and accessories shall be installed in accordance with the approved manufacturer's instructions.

1403.12 Polypropylene siding. Polypropylene siding shall be certified and labeled as conforming to the requirements of ASTM D7254 and those of Section 1403.12.1 or 1403.12.2 by an approved quality control agency. Polypropylene siding shall be installed in accordance with the requirements of Section 1404.18 and in accordance with the manufacturer's instructions. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1403.12.1 Flame spread index. The certification of the flame spread index shall be accompanied by a test report stating that all portions of the test specimen ahead of the flame front remained in position during the test in accordance with ASTM E84 or UL 723.

1403.12.2 Fire separation distance. The fire separation distance between a building with polypropylene siding and the adjacent building shall be not less than 10 feet (3048 mm).

1404.18 Polypropylene siding. Polypropylene siding conforming to the requirements of this section and complying with Section 1403.12 shall be limited to exterior walls located in areas where the wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the

building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Polypropylene siding shall be installed in accordance with the manufacturer's instructions. Polypropylene siding shall be secured to the building so as to provide

weather protection for the exterior walls of the building.

2605.3 Plastic siding. Plastic siding shall comply with the requirements of Sections 1403 and 1404.

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

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

Justification for no cost impact:

The proposed code change ensures that existing requirements for exterior wall assemblies and exterior wall coverings are applied to the use of plastic lumber and wood-plastic composite materials in those applications.

FS112-24

Public Hearing Results (CAH1)

Committee Action: **As Submitted**

Committee Reason: The committee concluded that the proposal adds good clarification to the code text and addresses an issue that the code is silent on(Vote: 12-0).

FS112-24

Individual Consideration Agenda

Comment 1:

IBC: 1404.19, 1404.19.1, 1404.19.2

Proponents: Theresa Weston, The Holt Weston Consultancy, Rainscreen Association in North America (holtweston88@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

1404.19 Plastic lumber or wood-plastic composite exterior wall covering materials. Plastic lumber materials and wood-plastic composite materials used as exterior wall coverings shall comply with this section and Section 1403.15.

Delete without substitution:

~~**1404.19.1 Design wind pressure 30 pounds per square foot or less.** Plastic lumber and wood-plastic composite exterior wall coverings materials shall be limited to exterior walls located in areas where the design wind pressure determined in Section 1609 speed does not exceed 30 pounds per square foot (1.44 kN/m^2) except as provided for in 1404.19.2.~~

Revise as follows:

~~**1404.19.2**~~ **1404.19.1 Design wind pressure** ~~**greater than 30 pounds per square foot.** Where the design wind pressured determined in Section 1609 exceeds 30 pounds per square foot (1.44 kN/m^2), tests~~ Tests or calculations indicating compliance with Chapter 16 shall be submitted.

Reason: While we do not dispute the inclusion of plastic lumber products in the code, we believe that the current proposal does not adequately address the structural performance and that "tests or calculations indicating compliance with Chapter 16 shall be submitted" at all wind pressures and not just those over 30 pounds per square foot. The proposal reason statement invokes ASTM D8484 as providing requirements for wind-load resistance. However, ASTM D8484 contains only circuitous and vague requirements for wind

design. Specifically, Table 1 "Requirements for Plastic Lumber Materials and Wood-Plastic Composite Materials: in ASTM D8484, states the criterion for "Wind Load Resistance" as "IBC or IRC". This criterion would presumably point the user back to IBC Chapter 16, but if the code in Chapter 14 excludes wind-pressures of 30 pounds per square foot or less, products would not need to comply for these lower pressures. Currently, these products are allowed as alternate materials evaluated to ICC-ES AC524. A review of published evaluation reports(1-3) shows that wind load design includes specific products, cladding orientation, and attachment spacing.

Bibliography:

1. ICC-ES Evaluation Report ESR-3923 https://icc-es.org/report-listing/esr-3923/
2. ICC-ES Evaluation Report ESR-4441 https://icc-es.org/report-listing/esr-4441/
3. ICC-ES Evaluation Report ESR-4944 https://icc-es.org/report-listing/esr-4944/

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

Justification for no cost impact:

The proposal clarifies that the structural requirements of the siding are those in the IBC Chapter 16, rather than following a circuitous route through the ASTM standards and either the IBC or the IRC.

Comment (CAH2)# 248

FS113-24

IBC: SECTION 202 (New), 1403.15 (New), 1403.15.1 (New), 1403.15.1.1 (New), ICC Chapter 35 (New)

Proposed Change as Submitted

Proponents: Keith P Nelson, DuPont, DuPont (keith.nelson@dupont.com)

2024 International Building Code

Add new definition as follows:

MAGNESIUM-OXIDE-CEMENT PANEL PRODUCT. The general name for a family of panel, board, and sheet products having a core consisting essentially of magnesium-oxide-cement and reinforced with organic or inorganic fibers.

Add new text as follows:

1403.15 Magnesium-oxide-cement panel product. *Magnesium-oxide-cement panel product* shall conform tothe requirements of ICC 1125. Installation shall be in accordance with the manufacturer's installation instructions or an *approved* design.

1403.15.1 Surface burning characteristics. *Magnesium-oxide-cement panel product* shall have, when tested in accordance with ASTM E84 or UL 723, a *listed flame spread index* of 25 or less. The ASTM E84 or UL 723 test shall be continued for an additional 20-minute period and the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

1403.15.1.1 Alternate fire testing. *Magnesium-oxide-cement panel product* shall have,when tested in accordance with ASTM E2768, a *listed flame spread index* of 25 or less and where the flame front does not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

Add new standard(s) as follows:

ICC

International Code Council, Inc.
200 Massachusetts Avenue, NW, Suite 250
Washington, DC 20001

1125 Standard for Classification of Magnesium Oxide Boards in Building and Construction (IS-MGOB)

Reason: The code change is introducing a new, North American construction material as defined by the ICC-1125 performance standard under development. The MgO industry desires to add these requirements to the IBC given the import of offshore materials, the scaling of North American production capacity, and the use of all these materials in commercial construction.

The surface burning characteristics limitation is similar to an existing exterior sheathing material in Section 2303.2. Applicable code requirements such as assembly fire performance tests still apply. Installation is to be in accordance with the manufacturer's instructions or an approved structural design for sheathing. The product is currently evaluated under ICC-ES Acceptance Criteria AC-386 for Fiber-Reinforced Magnesium-Oxide-Based Sheets and AC-530 for Fiber-Reinforced Magnesium-Oxide-Based Sheets with a Factory-Bonded Water-Resistive Overlay Membrane.

A Group B code proposal will be submitted for IBC Chapter 6 to address use of MgO in Type I, II and III construction:

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. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 and magnesium-oxide-cement panel product conforming with Section 1403.15 shall be permitted within exterior wall assemblies of a 2-hour rating or less.

603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:
[...]

29. Magnesium-oxide-cement panel product conforming with Section 1403.15.

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

Justification for no cost impact:

The proposal provides another sheathing product alternative and as such does not raise or decrease the cost of construction. The designer is free to choose which sheathing product is most effective for the application. The cost to the manufacturer is neutral as the testing requirements are similar for ICC-1125 and the ICC-ES Acceptance Criteria.

FS113-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee determined that the reason for the disapproval is due to the fact that the proposed language is based on a standard that has not been approved yet (Vote: 12-0).

FS113-24

Individual Consideration Agenda

Comment 1:

IBC: SECTION 202, 1403.15, 1403.15.1, 1403.15.1.1, ICC Chapter 35

Proponents: Keith P Nelson, DuPont, DuPont (keith.nelson@dupont.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

MAGNESIUM-OXIDE-CEMENT PANEL PRODUCT. The general name for a family of panel, board, and sheet products having a core consisting essentially of magnesium-oxide-cement and reinforced with organic or inorganic fibers.

Revise as follows:

1403.15 Magnesium-oxide-cement panel product. *Magnesium-oxide-cement panel product* shall conform to the requirements of ICC 1125 or as *approved* by the *building official. Magnesium-oxide-cement panel products* conforming to ICC 1125 shall be identified by the manufacturer's designation to indicate compliance with this standard. Where used structurally, the products shall be identified by the *label* of an *approved agency.* Installation shall be in accordance with the manufacturer's installation instructions or an *approved* design.

1403.15.1 Surface burning characteristics. *Magnesium-oxide-cement panel product* shall have, when tested in accordance with ASTM E84 or UL 723, a *listed flame spread index* of 25 or less. The ASTM E84 or UL 723 test shall be continued for an additional 20-minute period and the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

1403.15.1.1 Alternate fire testing. *Magnesium-oxide-cement panel product* shall have,when tested in accordance with ASTM E2768, a *listed flame spread index* of 25 or less and where the flame front does not progress more than 10.5 feet (3200 mm) beyond the

centerline of the burners at any time during the test.

ICC

International Code Council, Inc.
200 Massachusetts Avenue, NW, Suite 250
Washington, DC 20001

1125 Standard for Classification of Magnesium Oxide Boards in Building and Construction (IS-MGOB)

Reason: In the last hearing we asked for disapproval because ICC 1125 committee had not been formed. We also received comments from interested stakeholders at the hearing and in the public comment period.

In discussion with interested parties, there was a request to identify the product and its conformance with the standard. We are proposing to mark the product to identify conformance with the standard following the language of 2024 IBC 2507.1 for Gypsum Panel Products. When used structurally, the revised proposal labeling requirement follows the language of 2303.1.7 for Hardboard.

ICC 1125 is in development and is projected to be complete and published prior to the April 2026 deadline; the content is largely based on ICC-ES AC386. The main committee has been formed and as of this writing has met twice with multiple meetings with the four work groups including: WG1 Administration and Definitions, WG2 Wall Sheathing and Floor Underlayment, WG3 Roof and Floor Sheathing, and WG4 Tile Substrate.

This proposal is to address the increased use of magnesium-oxide-cement panel product in buildings utilizing alternative means and methods provisions. Acceptance of this proposal will establish minimum performance requirements, quality, and consistency with the intent of the original code proposal.

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

Justification for no cost impact:

The modification to the original proposal presented in this comment provides additional clarification to the original proposal with regard to compliance of magnesium-oxide-cement panel products. The proposal remains one that regards another sheathing product alternative that, as such, does not increase or decrease the cost of construction.

Comment (CAH2)# 309

FS117-24

IBC: 2603.1.1, IAPMO/ANSI (New)

Proposed Change as Submitted

Proponents: Justin Davis, Self

2024 International Building Code

Revise as follows:

2603.1.1 Spray-applied foam plastic. Single- and multiple-component *spray-applied foam plastic* insulation shall comply with the provisions of Section 2603 and either ICC 1100 or IAPMO/ANSI ES1000.

Add new text as follows:

IAPMO/ANSI ES. 1000-2020- Building Code Compliance Spray-Applied Polyurethane Foam

Reason: To allow the use of an additional active consensus standard for use showing compliance with the International Building Code. Historically, the codes have included multiple standards that have been used to show compliance. IAPMO/ANSI ES1000 is in the process of being updated at this time.

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

Justification for no cost impact:

The new standard is an option to what is already in place in the code.

FS117-24

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee disapproved the proposal due to the fact that there are many questions regarding the standard. The committee indicated that the reason statement does not include details on the necessity of the proposal (Vote: 12-0).

FS117-24

Individual Consideration Agenda

Comment 1:

Proponents: Justin Davis, Self, Self requests As Submitted

Reason: Approving the IAPMO/ANSI ES1000 standard provides many advantages to both the building industry and to the general public. The spray foam industry is very innovative and constantly developing methods to use spray foam products. As of Summer 2024, the existing standard in the 2021 International Codes is 5 years old. One update in the past five years does not capture the progress the

spray foam industry has made. Multiple standards will offer more opportunities to reflect the progress.

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

Comment (CAH2)# 557

FS121-24

IBC: 2603.9

Proposed Change as Submitted

Proponents: Eric Banks, e.w.banks consulting llc, North American Modern Building Alliance (NAMBA) (eric.banks@ewbanksconsulting.com)

2024 International Building Code

Revise as follows:

2603.9 Special approval. Foam plastic and assemblies containing foam plastic shall not be required to comply with the requirements of Section 2603.4 or those of Section 2603.6 where specifically *approved* based on one of the following large-scale tests:

1. NFPA 286 using the acceptance criteria of Section 803.1.1.1.
2. Room Test of FM 4880.
3. ~~UL 1040.~~
4. ~~4~~ 3. UL 1715.

Such testing shall be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as *interior finish* on the basis of these tests shall also conform to the *flame spread* and smoke-developed requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

Reason: The proposed change brings the approved test methods of 2603.9 Special Approval in-line with the Integrity Fire Tests (Part II) of NFPA 275 *Standard Method of Fire Tests for the Evaluation of Thermal Barriers*. NFPA 275 is a performance testing option referenced in the requirements of Section 2603.4 Thermal barrier. Section 2603.9 Special approval provides another performance test option to permit the use of foam plastic insulation without the thermal barrier required in Section 2603.4 by demonstrating equivalent performance – i.e., no flashover for a period of at least 15-minutes.

The FM 4880 approval standard contains four (4) different large-scale fire tests (Room Test, 16-ft High Parallel Panel Test, 25-ft High Corner Test, and 50-ft High Corner Test) and a series of performance ratings defined by insulation type, facer type, and a prescribed series of tests. It is understood that the 25-ft and 50-ft High Corner Tests have not been performed on foam plastic panels / assemblies for many years, in part due to the availability of the Room Test option provided in FM 4880.

The NFPA 275 Standard Method of Fire Tests for the Evaluation of Thermal Barriers, referenced in Section 2603.4, also generically referenced FM 4880 among the approved test methods for the Integrity Fire Tests (Part II) of the evaluation. The 2022 Edition of NFPA 275, however, was revised to was more clearly and specifically reference the Room Test of FM 4880.

The UL 1040 is also a very large-scale test, using a 20-ft by 20-ft by 30-ft high open-corner configuration, a 764-pound wood crib ignition source and a 30-minute test duration. This test has also not been performed in many years due, to its size, associated cost, and the availability of NFPA 286 and UL 1715 . The NFPA 275 Standard Method of Fire Tests for the Evaluation of Thermal Barriers, referenced in Section 2603.4, referenced UL 1040 among the approved test methods for the Integrity Fire Tests (Part II), however, it was removed from the 2022 Edition of NFPA 275.

The changes will improve the consistency of the evaluations performed under Section 2603.9 and its intent in terms of the Special Approval in reference to Section 2603.4.

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

Justification for no cost impact:

The proposed code change provides clarification regarding the existing tests required for compliance with Section 2603.9.

Public Hearing Results (CAH1)

Committee Action: **Disapproved**

Committee Reason: The committee stated that the reason for the disapproval is because the proposal deletes a necessary standard that needs to be maintained in the code (Vote: 11-1).

FS121-24

Individual Consideration Agenda

Comment 1:

IBC: 2603.9

Proponents: Eric Banks, e.w.banks consulting llc, North American Modern Building Alliance (NAMBA) (eric.banks@ewbanksconsulting.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Building Code

2603.9 Special approval. Foam plastic and assemblies containing foam plastic shall not be required to comply with the requirements of Section 2603.4 or those of Section 2603.6 where specifically *approved* based on one of the following large-scale tests:

1. NFPA 286 using the acceptance criteria of Section 803.1.1.1.
2. Room Test of FM 4880.
3. UL 1040.
4. ~~3~~ 4. UL 1715.

Such testing shall be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as *interior finish* on the basis of these tests shall also conform to the *flame spread* and smoke-developed requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

Reason:
We, the proponent, are submitting this comment to modify proposal FS121-24 based on testimony provided during Group A CAH #1, the committee discussion, and the committee action. The modification reverses the original proposal's removal of UL 1040 from Section 2603.9.

Committee action for disapproval of FS121-24 indicated agreement with testimony opposed to removing UL 1040 as a compliance option for the Special Approval under Section 2603.9. Subsequent further review of UL's Product iQ online directory shows four (4) of the five (5) active listings for UL 1040 (UL Category Code: NYWR) were updated between 2018 and 2023 with the fifth listing as last updated in 1996. These recent updates demonstrate that manufacturers are maintaining listings regarding UL 1040, regardless of whether or not new tests are being conducted.

No testimony was provided in opposition to clarifying the Room Test of ANSI / FM 4880, nor did the committee discuss the issue or

comment on it in the Committee Reason for disapproval of FS121-24.

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

Justification for no cost impact:

The modification presented in this public comment reverses the as-submitted proposal's removal of an existing compliance option, therefore, the proposal remains one that is editorial in nature or a clarification and with no impact on the cost of construction.

Comment (CAH2)# 294